

GOVERNMENT OF INDIA.

REVENUE AND AGRICULTURAL DEPARTMENT.

RESOLUTIONS OF THE GOVERNMENT OF INDIA REGARDING THE
FAMINE RELIEF CODES, AND OTHER MATTERS PERTAINING
TO FAMINE ADMINISTRATION.

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Extract from the Proceedings of the Government of India, in the Revenue and Agricultural Department (Famine),—Circular No. 44F., dated Simla, the 9th June 1883.

READ the following papers :—

- Circular letter to Local Governments and Administrations, Nos. 163—177, dated 18th November 1880.
- Letter from the Agent to the Governor General, Central India, No. 321, dated 7th December 1880.
- Despatch to the Secretary of State for India, No. 4, dated 14th March 1881.
- Letter from the Government of the North-Western Provinces and Oudh, No. 87, dated 18th April 1881.
- Letter from the Secretary for Berar to the Resident, Hyderabad, No. 201, dated 25th May 1881.
- Letter from the Government of Bombay, No. 3234, dated 6th June 1881.
- Endorsement from the Foreign Department, No. 818 I. G., dated 9th July 1881, forwarding copy of a letter No. 230, dated 28th May 1881, from the Officer on Special duty in Kashmir.
- Letter from the Chief Commissioner, Central Provinces, No. 3314-179, dated 5th September 1881.
- Endorsement from the Foreign Department, No. 1884 I. G., dated 9th November 1881, forwarding copy of a letter from the Agent to the Governor General, Baluchistan.
- Letter from the Government of Bengal, No. 2558—109 (Famine), dated 19th November 1881.
- Letter from the Agent to the Governor General at Baroda, No. 9709, dated 25th November 1881.
- Letter from the Chief Commissioner, Assam, No. 168T., dated 21st January 1882.
- Letter from the Chief Commissioner, British Burma, No. 12, dated 1st February 1882.
- Letter from the Chief Commissioner, Ajmere-Merwara, No. 124, dated 20th February 1882.
- Letter from the Agent to the Governor General, Rajputana, No. 365 G., dated 20th February 1882.
- Letter from the Government of the Punjab, No. 320S., dated 20th September 1882.

Read also—

Despatch from the Secretary of State, No. 14 (Revenue), dated 22nd February 1883.

RESOLUTION.—The Government of India is pleased to issue the following instructions regarding the adoption of a Code for Famine Relief.

2. In the 113th paragraph of the first part of their Report the Famine Commissioners suggested that the Government of India should issue a set of rules that would govern the administration of famine relief; and that the broad principles being therein fixed, it would be the duty of each Local Government to apply them by drawing up a Famine Code applicable to the special circumstances of its Province. They expressed their intention of appending to their Report a draft of Imperial Rules, as well as a model of a Provincial Code. A draft Code, drawn up by the Secretary to the Commission, was received from England and was circulated in India with G. O. Nos. 163 to 177, dated 18th November 1880, for the opinion of Local Governments and Administrations. But the Famine Commission was dissolved without having had an opportunity either of drawing up the proposed rules, or of communicating their formal confirmation of the draft Code which had been circulated. This circumstance was not made known to the Government of India until a considerable period had elapsed after the circulation of the draft Code. Under these circumstances, it was considered desirable to await an expression of the opinion of the various Local Governments which had been consulted on the draft Code, before issuing any general instructions as to the principles which the Government of India desired to be embodied in the rules. Nor has this been without advantage, as it has enabled the Government to ascertain the opinions of responsible authorities on many important issues which the Report of the Famine Commissioners raised.

3. A Code, revised in the light of these opinions and criticisms, was ready for issue at the commencement of the rainy season of 1882. Its immediate promulgation was, however, rendered unnecessary by the early fall of rain

throughout the greater part of India, which entirely removed any apprehension of famine during the current year. In the meanwhile those portions of the Code which related to local administration and public works were subjected to the criticism of special officers, and to further revision. It now remains to issue the Code and to explain the leading principles which should guide the administration of famine relief. These conclusions have been formed after a full consideration of the recommendations of the Famine Commission and of the opinions of Local Governments. But they are of course open to such modifications as further experience in working out the details of famine relief may suggest.

4. The first important principle on which both Her Majesty's Government and the Government of India are agreed is that the State cannot undertake to interfere in every isolated and individual case of distress. The Secretary of State has said that "what will justify the application of the general resources of the State to the relief of want and suffering is the occurrence of a natural calamity affecting a material portion of the population of any locality." But beyond this it is impossible to define the limits of Government interference, or to mark the precise point where scarcity commences, or where scarcity deepens into famine. It is equally impossible to say what is the smallest area in which the existence of scarcity or famine would justify measures of relief. If the approach of famine is thus gradual, if the area affected may thus expand from a few villages to a whole Province, the machinery for administering relief should be framed accordingly. In other words, the revenue staff of the Province should be such as to readily admit of expansion, and so arranged as to avoid the necessity of calling into existence an entirely new agency or department for the purpose of dealing with measures of famine relief. The real question, therefore, is whether the ordinary administrative arrangements in each Province are in this respect on a satisfactory footing. In proportion as they approach this ideal standard will it be possible to administer a famine or a scarcity by simply expanding or strengthening the normal district staff.

5. That such perfection has hitherto rarely or ever been attained in any Province is obvious. Recognising this as one of the leading difficulties of famine relief, the Famine Commission suggested many important administrative changes, some of which have, during the past year, been accepted by Local Governments and Administrations, while others are still under the consideration of the Government of India. The drafters of the original Famine Code naturally assumed that in most Provinces the ordinary revenue staff was unable to cope with a great scarcity or famine. The Code was framed accordingly. It provided for the creation of a special Famine Department whenever the first note of alarm was sounded. Such a dislocation of the ordinary framework of administration will now, it is hoped, be gradually prevented by the adoption of permanent measures of reform. Pending, however, the development of these administrative arrangements, it is necessary to provide a Code of Famine Relief for guidance in the event of the early occurrence of famine. Accordingly the Government of India, while indicating generally the principles on which famine relief should proceed, has prepared a Provisional Code, which should for the present be adopted as far as possible in every Province for which no separate Code has been sanctioned.

6. The Code is based upon the draft received from England, but has followed in many respects the Code recently prepared for the Madras Presidency under the orders of the Government of Madras with the concurrence of this Government. The Code is distinctly provisional, and the Government of India recognises that to some Provinces many of its provisions are more or less inapplicable. If, therefore, other Local Governments should prefer to follow the example of Madras and prepare Provincial Codes, the Government of India has no objection to their doing so. But until this is done, the Provisional Code should be accepted, and in any case the broad principles embodied in it should not be departed from without a previous reference to this Government.

7. It will be seen that the present Code is less definite and less precise than the draft Code already circulated. Its comparative incompleteness requires explanation. In advising the preparation of a Famine Relief Code, the Famine Commissioners found themselves in a difficult position. They were

brought when dealing with famine into contact with almost every question of revenue administration, and found themselves under the obligation of suggesting many important reforms of a permanent character. But it was impossible for them to predict either how far or how soon the general reforms which they recommended would be accepted. Their draft Code, however, was modelled on the assumption that their recommendations would be carried out. It was therefore definite and precise, as well as elaborate. The Code of the Government of India, on the contrary, has had to accept existing facts, and is restricted to providing a provisional system of famine relief. Being strictly provisional, the Code can hereafter be enlarged or altered in keeping with the progress of administrative reform.

8. The Agricultural Department, for example, which forms so prominent a feature in the Report of the Famine Commissioners and in the draft Code, finds little or no place in the Provisional Code. This is due to two reasons. In the first place, Agricultural Departments do not exist in every Province, or where they exist have not as yet been fully organised. Secondly, the Government of India does not think that the creation of an Agricultural Department in a Province should materially affect existing administrative arrangements, or that it should be exclusively charged with the organisation of famine relief. The Government of India, it is true, has fully accepted the policy that Agricultural Departments should by their enquiries and investigations endeavour to meet the agricultural wants of the country so as to enable the Government with increasing facility to cope with famine, scarcity, and rural distress. But this policy does not contemplate the creation of *quasi*-independent departments or lessening in any way the existing responsibilities of revenue officers. Least of all should this be the case on the occasion of famine. It thus becomes possible to codify the duties of all officials who are likely to be brought into contact with famine without specially mentioning those which might hereafter be assigned to Agricultural Departments, when more fully organised than at present.

9. It need hardly be said that the Government of India fully agrees with the Famine Commission that the administration of each Province should be such as will enable the revenue officials of all grades to be fully acquainted with its agricultural condition. On this point the views of the Government of India have already been communicated to Local Governments and Administrations. In the Provisional Code it has been assumed that in the different Provinces this essential requisite to efficient administration is more or less to be found. The Code, therefore, passes lightly over the ordinary duties of the revenue staff, and assumes that among them that of obtaining prompt information of the existence or the probability of distress is included.

10. It may, however, be noted that the Code contemplates the association of non-officials, where possible, with the district officer in the works both of obtaining early information of the existence of distress and also of relieving it. The extent to which this can be done will depend on local circumstances, but the general principle is one which will be readily assented to, and which has not been unrecognised in past famines. It presumes that the leading men of such districts should be invited to assist in providing information and in investigating the condition of the poorer classes, and also in superintending the administration of famine relief. The Government of India has accordingly made provision in the Code for imposing, where practicable, the two important duties of providing prompt and continuous information of the agricultural circumstances of the season, and of assisting in the organisation of local relief, upon local communities and their representatives under any local self-government arrangements which may be established.

11. In framing the definition of "district authority," the Government of India has also had in view the probability of the district officer being assisted in carrying out the duties of famine relief by Local Boards constituted by law. This the Government of India has attempted to effect by adopting an elastic definition of the term "district authority." The definition, it will be clearly understood, contemplates in every case the maintenance of the district officer as the responsible head and director of famine operations within his own district, but allows also for the possible association with him of district committees or other bodies under the local self-government schemes of the various

Provinces. It is left to Local Governments and Administrations to decide how far this principle shall be carried out, and whether the district officer shall alone, or in conjunction with others, be the "district authority."

12. So, again, the sections of the Code regarding circle inspectors have been framed to provide for two cases—(1) where a permanent agency is already in existence ; (2) where it has to be created. The description given in the Code of the class of officers who may come within the meaning of "a permanent agency" is sufficiently clear to require no further explanation. In the temporarily settled Provinces the subordinate revenue staff at the disposal of the district officer is obviously the best agency for the work of circle inspectors.

13. Other portions of the Code which deal with unofficial assistance will doubtless require to be revised with reference to local circumstances. The Code is so framed as to leave its provisions in this respect very elastic. The term "local area" used in the Code may, for instance, be of any extent which will fit in with local arrangements ; it may be one village or it may be a group of several villages. So, too, the "circle" referred to in section 6 of the Code may be a kanungo's circle, or it may be a sub-division of a district. In the same way full liberty is left to the Government of the Province to appoint lambardars, headmen, local committees, or, in towns, municipal committees, as the authorities responsible for the duties prescribed by local officers.

14. While, however, the principle of connecting the general public with the duties of famine relief should be recognised, the whole of the official machinery at the disposal of Government should also be utilised. Nor should any responsibility which may be thrown upon the community weaken that of the Government and its officers. Indeed the Government of India would like to feel assured that in every Province the subordinate revenue staff, whether kanungos, kurnams, or revenue inspectors, was equal to the duties sketched out in the Code. The decay of this class of officers in parts of India may be fully accounted for on historical or other grounds, but it is none the less to be regretted. The Government of India, however, has recently expressed its views at length on the subject, and is glad to know that much has already been done in many Provinces to restore an office on which native administrations set such store.

15. Among these officers the patwari, or village accountant, where such an officer exists, is no doubt the most important functionary. The area assigned to him is usually so limited that he may be held responsible for supplying full and timely information as to the character of the season or the condition of the agricultural population. He possesses too, or is expected to possess, sufficient skill to be able to provide information in a form in which it will be intelligible to Government officials, or in prescribed statements of a statistical character which will admit of easy collation ; on the other hand, he will be a useful agent in supplying information to, or receiving information from, local bodies where they exist.

16. Where the village accountants are grouped in circles, the supervising officers of such circles would naturally form the next channel through which information will pass. A much greater responsibility can be placed upon them than upon the village accountants. The latter are, from their position, the servants of two masters, and are exposed to great temptations. The former owe exclusive allegiance to Government, and are at all times particularly entrusted with the duty of providing correct information. It may not be possible to require all such officials invariably to reside within their respective circles, but the Government of India believes that the principle is one which should, as far as possible, be enforced.

17. Where village and circle organisation of this nature and of a permanent character exists, its efficiency greatly depends upon the district officer and his staff. The Government of India entirely agrees with the Famine Commission that the assistants to the district officer, whether covenanted civilians or not, should be required to maintain a thorough personal knowledge of the areas under their charge ; that they ought to visit all parts of their charge once at least within some stated period, and might be permitted to travel or reside within their sub-divisions at all seasons of the year, and should be directed to continue in an intelligible form the annals of each estate of which

the settlement officials have already recorded the initial history. It is to be feared that from various causes these important duties have in some parts of India hardly received the attention they deserve, and to this has been ascribed much of the local ignorance of the near approach of famine which has been displayed in some remarkable instances.

18. The Provisional Code assumes that the real responsibility for carrying out the rules and for adopting efficient measures within his district rests upon the officer in charge of it. The position of the district officer is too well known to require special notice, and, so far as it concerns the relief of famine, it is sufficiently secured in the Code. A chapter has been added on the duties of Commissioners of Divisions, with the view both of maintaining their recognised powers of direction and supervision, and of indicating that to these high officers the Government ought to primarily look for information and action. The Government of India need hardly express its conviction that not only in years of scarcity, but also at all other times, the Commissioner of a Division should keep his Government acquainted with the condition of his districts, and should be held strictly responsible for this duty. His position eminently enables him to study the agricultural requirements of the country, as the larger area over which he has jurisdiction offers greater facilities than a single district for ascertaining the extensive measures of protection against famine which can properly be undertaken or encouraged by Government. Of these the extension of irrigation, the establishment of fodder reserves and fodder plantations and the improvement of communications are among the most important. Whoever the officers may be by whom such schemes are ultimately carried out, the Commissioner is undoubtedly the person upon whom the primary duty of securing the better protection of his division against famine naturally falls.

Another duty of equal importance is that of assisting the agricultural population to recover from the after-effects of famine. The timely grant of such assistance is of almost as much importance as the actual relief of the people during the drought itself. The Government of India is not satisfied that this has always received the attention it deserves, and the duty of Commissioners of Divisions in this respect is obvious, and should be strictly enforced.

19. Thus far as regards the duties of revenue officials before or after the period of extreme famine. When the administration of famine relief actually begins, the system on which the Department of Public Works should be utilised becomes the matter of primary importance. This depends greatly upon the settlement of a question which has perhaps caused more division of opinion in connection with famine relief than any other. This question is whether the weaker section of a famine-stricken population should be relieved in their homes by house-to-house visitation, or should be brought on to public works and made to labour for their wage. The former plan has found strong advocates on the ground that it prevents confusion and wandering; that it demands a smaller contribution from public funds, inasmuch as a weakly person resting in his own house requires a smaller ration than when set to labour on a public work; that the addition to a public work of a large number of weakly persons unaccustomed to the class of labour required from them makes the results very costly; that regular workmen are demoralised by the spectacle of gangs of inferior workmen receiving a proportionately higher wage than themselves; and finally, that agricultural labour is divorced from the villages. The arguments on the other side are—that the people who receive assistance in their homes become themselves demoralised; that they are forced into the position of alms-fed paupers, and that, having once become accustomed to that position, they are unwilling to give it up and work for their bread; that the authorities have no real control over them except under an almost impossible scheme of costly supervision; that panics are therefore not unlikely to occur.

20. This question has been fully discussed by the Famine Commission, and their conclusion that labour commensurate with the labourer's powers should be exacted from all applicants for relief* is accepted by the Government of India. The Famine Commission further recommended that the needful

*Famine Commission Report, Part I, Paragraph 111.

to Professional Agency Works. In regard to the question of wage, section 43 merely states the general principle that piece work should be preferred to task work in the earlier stages of distress, as already explained.

Chapter III also mentions in section 30 another kind of employment under the title of "Supplementary Works," which requires some particular notice. At the beginning of a scarcity a large amount of agricultural labour is often thrown out of employment through the employers of such a labour curtailing their expenses to the utmost. In such seasons, especially where an absolute failure of the crops is not anticipated, liberal advances of public funds to the land-owning classes for the digging of temporary wells, the repair and construction of tanks, and the purchase of seed and cattle may enable them to find work for the agricultural labourers of their villages, and so to prevent the latter from wandering aimlessly about in search of food or work. The subject is one that merits more attention than it has generally received, and the Code suggests accordingly that it might be investigated by the Agricultural Department, where one exists, of the Province. The Code contemplates that the agricultural works entered on the supplementary list should ordinarily be set in motion through recoverable advances to landholders or village communities, and not directly by the district authority as a Civil Agency Work. But circumstances may arise—as, for example, the absence of other kinds of labour suitable for the infirm and weakly—which might justify the expenditure in the early stages of a scarcity of the local funds on supplementary works. In the foot-note to the 30th section of the Code a proposal is experimentally suggested which might, where circumstances are favourable, be tried. In Northern India, to which the Code is chiefly applicable, the soil, as a rule, is rendered more fertile by being dug or ploughed in anticipation of rain. This is especially the case when, as in 1877, a rain-crop which has failed is still on the ground, and can be dug into the soil. The occupiers or owners of such lands might possibly be willing to allow them to be tilled in the manner suggested by famine relief gangs, and might possibly agree to pay to the State some return for the benefit at the next harvest. This, however, is a question which it is desired that Agricultural Departments should work out.

Again, in many parts of Northern India it has been discovered by the people themselves that the carrot crop is the most speedy supply of food which can be grown when the ordinary autumn crops have failed. The crop is one, however, which demands continual irrigation. It may be found possible to increase largely the area or outturn of the carrot crop by employing agricultural labour in the autumn months in the irrigation from rivers or otherwise of this crop, which will produce a supply of food some months before the spring crop is ready. In this case the labour would be paid for either directly under the famine scale of wages, or indirectly by taccavi advances to landholders and tenants. The latter course is preferable, but the former might possibly, under special circumstances, as already said, be permissible.

23. The above instances will sufficiently indicate the policy regarding supplementary works suggested in section 30. In the early stages of a scarcity the advantages anticipated are—

First.—That the agricultural labourers are kept near the villages, and can at any moment betake themselves to their ordinary avocations if a fall of rain demands their return, which, under such circumstances, should be as speedy as possible.

Secondly.—That the work is such as to increase the outturn of the immediately ensuing harvest, which is an important object at a time when the food-supply is deficient. The fulfilment of this object, indeed, is the leading principle which should guide the choice of supplementary works by the Agricultural Department.

Thirdly.—That employment can thus be given to every kind of inferior labour. Weeding, for instance, can be effected by women and children of the weakest class, while hoeing, or disturbing the surface of a field, is fit employment for labourers of all kinds who are not equal to the harder work of digging.

24. In regard to Chapter IV, Professional Agency Works, attention is first invited to sections 65 and 66, which require a programme of famine relief works

of a large and important character to be prepared and kept up by the Public Works Department. In any serious famine such works, affording as they would employment to very large bodies of sufferers under efficient professional control, will be the backbone of the system of relief. The Government of India is fully sensible of the evils attending the withdrawal of the people from their homes and their concentration in huge relief camps. For these reasons the Government of India is willing to see district and local works utilised to the utmost in the early days of a scarcity. But these are obviously inadequate to cope with an actual famine, and therefore large public works under Professional Agency must be resorted to. When such projects are taken up as relief works, the Code provides that all skilled able-bodied workmen shall be segregated from the rest and treated under the ordinary rules for the conduct of Public Works. Unskilled or weakly labourers, who constitute classes (b) and (c), are, according to the Code, to be "treated under the rules for the conduct of Civil Agency Works," so far as they may be applicable. Section 73 allows the Commissioner of the Division to appoint a Civil Officer to control such works. But ordinarily it will be sufficient to associate with the Engineer in charge a Civil Officer, and to assign to the latter duties ancillary to the immediate professional management of the work.

25. No further explanation appears necessary of the principles involved in the chapters relating to public works. The Code is sufficiently explicit. Nor is it necessary to discuss the rules for the management of a poor-house. Certain proposals, however, have been made for special legislation, which, affecting as it would the treatment of labour on public works and poor-house, may be noticed. It has been proposed that able-bodied labourers, who refuse to work, should be made liable to punishment under the criminal law; and that officers should be legally empowered to retain weakly persons in poor-houses until the scarcity is over. The Government of India, as at present advised, is not convinced of the necessity of legislation. It believes that the evil, which has, in some parts of India, been a very prominent one on former occasions, will become under the more complete organisation contemplated by the new Code a matter of minor importance. The question should, however, receive very careful consideration in any future famine or scarcity of a serious character, and any cases which appear to show the necessity for legislation might be brought to notice.

26. The question of food-supply and storage requires a few words. On this point the Government of India fully accepts the policy advocated by the majority of the Famine Commission. The Government of India believes that there will always be available in India a sufficient food-supply in unaffected tracts to feed the inhabitants of any area visited by famine, provided that the state of the communications admits of such food being transported. The prohibition of exports can scarcely be justified in any conceivable circumstance, and the importation or storage of grain, or other similar measures, are, as a general rule, unnecessary. In particular localities difficult of access, or where dealers combine to withhold grain from sale, or where arrangements must be made for the food-supply of relief labourers, some intervention may be unavoidable. But it should be applied *pro re nata* to meet the particular emergency, and not permanently and in advance as by storage on a great scale. Where temporary markets have to be set up to supply food on relief works, it will often be necessary both to regulate the price of the food and to exercise the strictest supervision over its quality and over the supply of the market. The broad policy thus indicated, the Government of India leaves its application in particular instances to Local Governments. The Code allows grain-contractors to be

* Sections 12 to 14.

† Section 5.

‡ " 54.

appointed if they are required.* It allows gratuitous relief† and relief wages‡ to be paid in grain where food would be difficult to obtain in the open market. It requires the officer in charge of a relief work to supervise the market arrangements, whenever a market for the supply of food at a relief work is established.* These provisions will, it is anticipated, be found sufficient for all practical purposes.

27. The next matter which deserves some notice is that of the treatment of cattle. The Code itself is sufficiently clear as to the course which the

Government of India would like to see adopted ; and as the same question has been lately made the subject of a Resolution, No. 16A., dated 1st March 1883, it is unnecessary to enter into any detailed explanation of the chapter which provides measures for the protection of cattle, or of the reasons which led the Government of India to introduce it into the Code. It is sufficient to say that the question deserves more prominent notice than it has hitherto received in famine literature. Apart from all questions of humanity, the extreme importance, from an economic point of view, of sustaining the labour upon which the harvests of the immediate future depend is sufficiently apparent. While, therefore, the Government of India has taken special care, by the wording of section 99, that the Code shall not tie down any local authorities to the adoption of measures which may be unsuitable to the Province or the locality in which the distress may occur, it trusts that each Local Government will pay earnest consideration to this portion of the Code. The sympathy of many sections of the Native community may, it is thought, be enlisted in devising and carrying out practical measures which will prevent the wholesale destruction of cattle. The provision of tanks, the establishment of grazing reserves, and other measures of this kind will perhaps be willingly undertaken by Native proprietors when the object of them has been thoroughly explained ; for, unless reserves, tanks and pasture-grounds are available, the provisions of the Code will be of little effect.

28. The final matter to which the Government of India thinks proper to attach prominence is one which has given rise to much controversy. This is the question of wage. The principle upon which the Government of India has framed the scale of wages embodied in the Code is that the wage should be the lowest amount sufficient to maintain health under given circumstances. While the duty of the Government is to save life, it is not bound to maintain the labouring community at its normal level of comfort. To do so would be unjust to other sections of the community, besides prolonging the period for which the labouring population would cling to the relief works. The scale laid down in Chapter X is believed to be sufficiently liberal. On this point, however, the opinion of Local Governments is asked, and attention is invited to the appendix to this Resolution, in which are given the various scales of wages which have from time to time been adopted or preferred by various authorities.

29. The Code contains no provisions for accounts. In regard to this, Local Governments should frame rules under Chapter XI of the Code in conformity with Provincial arrangements.

30. The Government of India desires that the Code now issued shall be adopted, as far as may be possible, from the 1st July next in all Presidencies, Provinces, and Administrations, except Madras, for which a separate Code has been already framed. In case any Local Government wishes to revise, correct, or add to the Provisional Code, the proposals should be submitted in the form of definite rules incorporated in a revised Code, accompanied by such explanations as may be necessary. The Government of India will be glad to learn the views of the Local Governments at an early date.

Government of Bombay.	Chief Commissioner, British
" " Bengal.	Burma.
" " the North-	Chief Commissioner, Assam.
Western Provinces and Oudh.	" " Coorg.
Government of the Punjab.	" " Ajmere.
Chief Commissioner, Central	Secretary for Berar to Resi-
Provinces.	dent, Hyderabad.

ORDER.—Ordered, that the above Resolution be communicated to the Local Governments and Administrations noted in the margin for information and guidance.

Ordered also, that copies be forwarded to the Foreign, Finance and Commerce, Home and Public Works Departments for information and record.

II.

Extract from the Proceedings of the Government of India, in the Revenue and Agricultural Department (Famine),—Circular No. 63-77 C. (Famine), dated Calcutta, the 19th December 1889.

READ again—

Government of India Resolution No. 6—340-50 G., dated 8th December 1881.

Government of India Resolution No. 44 F., dated 9th June 1883.

Read also—

Correspondence with the Governments of Madras and Bengal regarding the distress and scarcity in parts of those Provinces during the year 1889.

RESOLUTION.—In 1883, upon the advice of the Famine Commissioners, a Provisional Famine Code was prepared by the Government of India and circulated to Local Governments and Administrations. The General Code thus issued was used as a basis for the Provincial Codes, in which the provisions of the General Code were so modified as to bring them into closer accordance with the conditions and circumstances of each Province. The Resolution with which the original Code was promulgated implied that some of its provisions might require to be tested by experience, and though, happily, since 1883 no severe famine of widespread character has afflicted the Empire, yet during the past intervening years no one of the Provinces in which famine is possible has entirely escaped the scarcity which follows a partial failure of the harvests, and which in certain limited areas has deepened into famine. His Excellency the Governor General in Council deems therefore that the time has now come when it will be convenient to subject the procedure founded upon the Provisional Code of 1883 to fresh scrutiny in the light of the experience gained in various parts of the Empire since that date, and desires to receive the opinion and advice of all Local Governments and Administrations, especially of those Provinces which may have been visited by scarcity or famine, on the working of the existing Codes.

2. One of the most important principles adopted in the Provisional Code was that a system should be established under which continuous information should be supplied from every "local area" of a district—in ordinary times, as well as in times of famine—as to the "condition of the crops and the state of the people." By "local area" was meant any small area within which there might be located some native official, or, to use the term of the Code, some "local officer" of sufficient intelligence to provide the superior authorities with such information as would keep them supplied with continuous knowledge of the general condition of every tract in the Province in all seasons and at all times. It would seem difficult, if this procedure were adopted, that scarcity could approach in any given region without being signalled in ample time from one or more of the local areas concerned.

3. It is doubtful, however, whether the principle to which reference has now been made has, in all of the Provincial Codes, been kept sufficiently in view. On a review of the history of the past few years the Government of India is able to acknowledge with satisfaction that whenever the condition and circumstances of a tract afflicted by scarcity have been thoroughly understood and the position clearly grasped, the zeal and intelligence with which the Famine Code has been administered and remedial measures applied have not only been commendable, but have secured efficient results. But it cannot avoid the conclusion that in the earlier stages of scarcity administrative operations have not always been equally successful and complete, and that the instructions laid down by the Codes for the guidance of local officials are imperfect and defective. Some of the Codes, for instance, impose on the District Officer the initial responsibility of keeping himself informed of the agricultural condition of his district without providing any rules under which it is made the normal duty of subordinate officials to submit periodical reports. The consequence has been that in some of the tracts which during the last few years have suffered from failure of the crops, the responsible authorities have not

become aware of the gravity of the position in time to make all those detailed preparations with which the coming scarcity should be met. In this connection attention is directed to paragraph 2 of the Provisional Code of 1883 and to paragraphs 14 to 17 of the Resolution with which it was circulated. These are appended for the purpose of easy reference to the present Resolution.

4. It is necessary to bear in mind that the primary object of the establishment of Imperial and Provincial Departments of Land Records and Agriculture was that of assisting the Administration in the prevention of distress due to scarcity and famine. The recommendation to create such Departments was one of the most prominent of those made by the Commissioners appointed to investigate the causes of famine and the means of protection against its results. And the Government of India, though preferring not to attach to the Agricultural Departments the executive authority involved in the suggestions of the Commissioners, nevertheless accepted, as the leading responsibility of the new agency, the important duty of creating and maintaining a scheme under which continuous information of the condition of each part of the Province should be supplied to the Local Government. This policy was enunciated both in the Resolution No. 6—340-50 G. of 8th December 1881 and in that of No. 44 F., dated 9th June 1883. Thus, in the 4th paragraph of the first-quoted Resolution it was written :—

“Consideration must be primarily given to the development of a permanent organisation in each province of such a character as may be most compatible with existing administrative arrangements with the view of confiding to it the execution of those measures which may be required for the maintenance of a thorough system of agricultural enquiry. Such enquiry cannot fail to lead in the course of time to sounder conclusions as to the direction in which it is desirable either to attempt agricultural improvement, or to afford protection to the agricultural population against the difficulties and danger of famine and drought.”

5. The duties relating to land records were to be made subservient to this important object. It was therefore added—

“In this connection the advantage of bringing an Agricultural Department in that section of its duties which appertains to agricultural enquiry into close connection with any official organisation already constructed, or at any future time required for the assessment of revenue, for the investigation of rent, rates and other issues between landlords and tenants, or for the revision and maintenance of village records, cannot be overlooked. In the words of the Famine Commissioners, ‘the success of an Agricultural Department would mainly depend on the completeness and accuracy with which agricultural and economic facts are collected in each village and compiled in each sub-division and district throughout the country.’”

The most important aim of agricultural enquiry was declared to be “the maintenance of agricultural operations at the highest attainable standard of efficiency ; “or in other words, “the full sustenance of agricultural labour and the complete provision of agricultural requirements, which meant in India that cultivators, their families and cattle must be properly fed, and their need for labour-irrigating machinery and agricultural implements adequately met.”

6. The Government of India is aware that in the seven years which have passed since the issue of the Resolution from which these extracts are made, time has been occupied in most Provinces in organising first the Department itself and next the local machinery, through the agency of which information and intelligence was initially to be collected. But the time has now come when the ultimate object of the creation of the Departments of Agriculture and Land Records must be more prominently brought forward. That object was the prevention of the evils resulting from famine and scarcity. The function assigned to the new Departments was similar to that assigned to the Intelligence Branch of a Military Department. In other words, they were to organise and maintain a system under which the responsible authorities should be kept continuously and automatically provided with prompt intelligence of agricultural circumstances. They were also to map out in each Province the tracts liable to scarcity and to investigate the causes which rendered them precarious, as well as to suggest measures for the improvement of their agricultural condition and the maintenance, in times of distress, of agricultural efficiency. In order to enable them to fulfil these objects, the ordinary and continuous duties imposed on the special Departments in connection with settlements and land records were designedly of such a character as would tend to place them in possession and control of all facts and statistics connected with the agricultural condition of every part of the country.

7. The organisation and maintenance of an efficient staff of village officers and their supervisors are subjects of equal importance. They cannot be dealt with in the Famine Codes. But it must not be forgotten that the duty of dealing with these questions under the direction of the Local Government, as well as of inspecting the local establishments and of assisting the District Officers to secure their efficiency, was imposed on the officers who were placed in charge of the special Departments of Land Records and Agriculture, with the view of securing the system of prompt intelligence to which reference has been made in the preceding paragraph, as well as of providing in each district a capable and well-organised machinery which can be employed as a section of the relief-inspecting agency on the occurrence of famine. Other subordinate officials on the executive staff of tahsil establishments must, if necessary, be similarly utilised, and the duty of instructing them in their duties under the Famine Code imposed upon some responsible officials in each district.

8. His Excellency the Governor General in Council now desires that the Codes should define precisely—

- (1) the functions actually assigned to the special Department in the different Provinces in connection with the system under which current and continuous information is provided, whether to District Officers or to the Government, as to the agricultural condition of the different districts and sub-divisions, especially under the heads of prices, rainfall, state of the crops and agricultural stock, imminence or prevalence of scarcity ;
- (2) the responsibility of the Department for the special inspection of, or report on, the prospects in any seriously menaced tract and for preparing a minute but compendious analysis of precarious tracts ;
- (3) the duties of village officers and their supervisors and other subordinate officials so far as they may be connected with reports on the agricultural condition of their villages and circles, or with their responsibilities on the occurrence of scarcity and famine.

9. This opportunity is taken to refer to other points which deserve attention. Some of the Codes contain no sufficient provision for testing the approach of scarcity by prices. While recognising that inspection alone can furnish the District Officer with information of a reliable character regarding the prevalence of distress, the Government of India cannot ignore the importance of keeping a systematic watch upon prices as a rough but useful indication of the condition of food stocks. Some rule requiring the District Officer to submit at all times an explanation of any material rise in prices, with a brief report as to its effect on the people, should find a place in every Code.

10. Another matter on which the Codes require amplification is that which

any definite conclusions at which the Local Government or Administration may have otherwise arrived in connection with the improvement of the Codes, may be submitted in the form of precise rules. The Government of India will at the same time be glad to receive the views of every Local Government or Administration upon any question connected with the subject-matter of this Resolution which it may consider desirable to refer for the consideration of the Government of India.

Madras.
Bombay.
Bengal.
North-Western Provinces
and Oudh.
Punjab.

Central Provinces.
Burma.
Assam.
Ajmere.
Coorg.
Resident at Hyderabad.

ORDER.—Ordered, that a copy of this Resolution be forwarded to the Local Governments and Administrations noted in the margin for information and guidance.

Ordered also, that a copy be forwarded to the Foreign, Finance and Commerce, Home and Public Works Departments for information.

III.

Extract from the Proceedings of the Government of India, in the Revenue and Agricultural Department,—Circular No. 25—1, dated Simla, the 10th September 1891.

Read again—

1. Government of India Resolution No. 6—310-50 G., dated 8th December 1881.
2. Government of India Resolution No. 44 F., dated 9th June 1883.
3. Government of India Circular No. 90 F., dated 23rd June 1885.

Read also—

1. Government of India letter to Government of Madras, 109 F., dated 28th October 1889.
2. Government of India letter to Government of Bengal, No. 111 F., dated 31st October 1889.
3. Government of India Resolution No. 63 F., dated 19th December 1889.

Read also the following:—

1. Letter from the Chief Commissioner of Assam, No. 1068 G., dated 8th March 1890.
2. Letter from the Chief Commissioner, Coorg, No. 881—1255, dated 25th June 1890.
3. Letter from the Government of the North-Western Provinces and Oudh, No. 1288 S., dated 1st August 1890.
4. Letter from the Government of Bombay, No. 5779, dated 16th August 1890.
5. Letter from the North-Western Provinces and Oudh, No. 1452 S., dated 28th August 1890.
6. Letter from the Government of the Punjab, No. 909 S., dated 22nd September 1890.
7. Letter from the Chief Commissioner of Burma, No. 481—2 S.F., dated 11th October 1890.
8. Letter from the Resident at Hyderabad, No. 392, dated 14th November 1890.
9. Letter from the Chief Commissioner of Ajmere-Merwara, No. 116 C., dated 6th December 1890.
10. Letter from the Government of Madras, No. 1027, dated 19th December 1890.
11. Letter to the Chief Commissioner, Ajmere-Merwara, No. 133 F., dated 16th January 1891.
12. Letter from the Chief Commissioner, Central Provinces, No. 452—73 S., dated 27th January 1891.
13. Letter from the Government of Bengal, No. 56 (Famine), dated 10th June 1891.

RESOLUTION.—In Resolution No. 63 F., dated 19th December 1889, the Government of India asked for the opinion and advice of all Local Governments and Administrations, especially of those Provinces which have been recently visited by scarcity or famine, on the working of the existing Famine Codes and for suggestions as to their improvement.

2. The subjects specially mentioned as deserving consideration were the following:—

- (1) The function of the Department of Agriculture and Land Records in connection with the system under which current and continuous information is provided to District Officers and Government on agricultural matters.

- (2) The responsibility of the Department for special inspections in tracts menaced with scarcity or famine.
- (3) The duties of village officers and other subordinates for reporting on the agricultural condition of their villages or circles.
- (4) The extent to which a rise in prices should be accepted as a famine warning.
- (5) The utilisation of forests in times of scarcity.
- (6) The maintenance of the scheme of famine works.
- (7) The relative advantage of a money-dole, grain-dole and cooked food for purposes of gratuitous relief.

3. Replies have now been received from all Local Governments and Administrations, and on a review of them the Government of India are pleased to issue the following remarks and instructions.

4. On the subject of the functions of the Departments of Land Records and Agriculture, the Government of India consider it desirable to call renewed attention to the 4th paragraph of the Resolution above quoted, in which it was pointed out that these Departments were primarily created at the instance of the Famine Commissioners, for the purpose of assisting the Administration in the prevention of distress due to scarcity and famine, and that the Government of India, though preferring not to attach to these Departments the executive authority involved in the suggestions of the Commissioners, nevertheless accepted as the leading responsibility of the new agency the important duty of creating and maintaining a scheme under which continuous information of the condition of each part of the Province should be supplied to the Local Government.

5. The Government of India, after a careful consideration of the replies received on this subject, now lay down the following rules regarding the duties of the Department :—

- I.—If in any Province the system under which information supplied periodically in normal times regarding prices, rainfall, state of the crops and agricultural stock, and other circumstances from which the approach of scarcity and agricultural distress can be detected is, or is considered, imperfect, it shall be the duty of the Director of the Department of Land Records and Agriculture to submit to the Local Government and Administration to which he is subordinate suggestions for the improvement of the system. Any suggestions submitted under this rule with the orders passed thereon shall be briefly noticed in the annual report of the Department.*
- II.—Whatever system be established for the normal supply of information of the character described in Rule I, it shall be the duty of the Director of the Department and his assistants to ascertain by periodical inspection that the system is in normal times being efficiently and properly worked in each district, and to report to the District Officer and any other authorities whom the Local Government may direct any defects in its working.*
- III.—It shall be the duty of the Director to compile and collate periodically in an intelligent form the facts and statistics which are derived from the system established for the provision of the information of the character above described. For this purpose he should have full access under such rules as may be laid down by the Local Government to any statistical and agricultural returns and reports which are submitted by District Officers to the higher revenue authorities.*
- IV.—It shall be his duty to prepare from time to time after an examination both of settlement reports and other similar sources of information which may be available, as well as of the information periodically collated in his own office, a statement of the agricultural circumstances of each tract of the Province and of the measures, if any, which are in his opinion required to improve the agricultural efficiency thereof as prescribed in paragraphs 8, 9 and 10 of the Government of India Resolution No. 6—340-55-G., dated 8th December 1881.*

6. It will be observed that the duties thus laid down for observance by the special Departments are, while in consonance with those prescribed in the Resolution under which these Departments were constituted, in no respect affected by the occurrence of famine or scarcity. The duties are such as must be continuously performed in normal times, and the object of them is the establishment and maintenance of a system under which the responsible authorities will receive timely warning of the approach of famine or scarcity. In more than one of the replies received from Local Governments on this subject the Resolution of the 19th December 1889 appears to have been read as implying that the Local Government was to look to the special Departments, and not to District Officers, for the indications of approaching scarcity. This is very far from the intention of the Government of India. In the 6th paragraph of that Resolution it was explained that the Resolution of 1881 under which these Departments were created required them "to organise and maintain a system under which the responsible authorities should be kept continuously and automatically provided with prompt intelligence of agricultural circumstances." No suggestion was made, either in the Resolution of 1881 or of 1889, that intelligence should be supplied by district subordinates otherwise than to District Officers, or to the Local Governments otherwise than by District Officers through the usual channels. The Government of India demand only that the special Department should be utilised to examine and report on the efficiency of the working machinery, not that the Department should itself work the machinery. This policy is clearly understood and carried out in many Provinces, in which it is now fully realised that inspection by the officers of an expert department is necessary for the efficient maintenance of maps and records, and that with few exceptions the reports and suggestions of the inspecting officers are of material service to those District Officers to whom they are made, and secure as a general result that maps and records are kept up to a uniform standard throughout the Province. More than this the Government of India do not require.

7. They now pass on to the second question raised in the Resolution of 1889, whether the new Departments should be made responsible for the special inspection of seriously menaced tracts. This suggestion was more in consonance with the policy proposed by the Famine Commissioners than with that of the Government of India, or with that generally adopted by Local Governments. The subject had, however, never received full discussion and was ascertained to be one on which in some Provinces doubts still remained. The Government of India are now able to advise definitely that, save for exceptional reasons, no rule need be laid down requiring the submission by the Department of Agriculture of special reports on menaced tracts. The responsibility of keeping Government informed must rest primarily on District and Divisional Officers, and it will be left to the discretion of the Local Government to make such use of the Agricultural Department for the prosecution of special enquiries as may be found convenient.

8. The third question raised was that of the duties of village officers and other subordinate officials in connection with reports on the agricultural condition of their villages or circles. These duties are fully understood in many Provinces. But in some the Resolution of 1889 has been read as referring only to special reports in times of approaching scarcity; whereas it was intended to refer mainly to such reports in ordinary times as would give full indication of agricultural conditions under all circumstances. Reports of this character form an essential part of the system of "intelligence" which it is the special duty of the Agricultural Department to assist the Local Government to organise and maintain. As explained in the 3rd paragraph of the Resolution of 1889, it is not sufficient that rules should be laid down for the submission of reports and the provision of information merely when agricultural distress is imminent, or that general instructions should be issued for District Officers to keep themselves informed of the condition of their districts. Experience has proved that without some special system requiring periodical reports in normal times the responsible authorities have failed to obtain timely information of approaching scarcity. The following rules which were practically embodied in the opening paragraphs of the Provisional Famine Code circulated by the Government of India in 1883, are based upon the practice

now exists in almost every Province, and should in some form or other be observed in all : —

V.—It shall be made the duty of village officers, their inspectors, or such other subordinate officials as the Local Government may direct to submit periodical reports on the agricultural condition of their villages or circles to such officers and in such form as may be prescribed by the Local Government.

VI.—When there are any indications of scarcity the reports required under Rule V should specially notice the general condition of the people and the existence of any abnormal distress or mortality.

9. The Government of India do not require that the Rules I to VI incorporated in this Resolution, or any instructions which may be based upon them by Local Governments, should be included in the Provincial Famine Codes. As pointed out in some of the replies received, such instructions find more convenient place in the rules separately prescribed for the conduct and duties of subordinate establishments. But the Government of India desire that they should be made a supplement to the rules laid down and appended to the Circular No. 90 F., dated 23rd June 1885, which dealt with the subject of Famine Codes.

10. The next question dealt with in the Resolution of 1889 was that of prices. It has been properly pointed out in some of the replies before the Government of India that prices do not in themselves provide a safe indication of the condition of any district. They are subject to fluctuation from many causes. Following, however, the suggestion of the Government of Madras, the Government of India consider it advisable that there should be embodied in the Famine Code a provision requiring District Officers to submit to the Government through the usual channels an explanation in all cases where the prices of any of the staple food-grains show a rise above a certain percentage over the normal rates. The percentage suggested by the Madras Government is 25, but the Government of India are disposed to prefer the percentage of 20 adopted in Bombay. They are content, however, to leave the decision to Local Governments. The "normal rates" should be based on the averages of previous years and published in a schedule prepared and subjected to periodical revision in the Agricultural Department of the Province, and the explanations should, when circumstances call for them, be briefly incorporated in the weather and crop reports submitted to the Government of India.

11. The next subject dealt with in the Resolution of 1890 is that of the

In this connection the attention of Local Governments is invited to the success which has attended the exertions of the Government of Madras, during the scarcity now prevailing in Chingleput and the neighbouring districts, to induce cultivators to accept taccavi loans for the construction of wells. It will be seen from the weekly reports on agricultural prospects published in the *Gazette of India* that in the district of Chingleput alone over 2½ lakhs have been lent in taccavi, and a very large number of wells have either been dug or are under construction. This example is one which may with advantage be followed elsewhere under similar circumstances.

13. The question of the relative advantage of the various forms of gratuitous relief, and that of compulsory relief which has been raised by the Government of Madras, are reserved for further consideration and enquiry by the Government of India.

14. The suggestion in Appendix B submitted by the Government of Bengal is circulated for general information, and the Government of India are prepared to sanction any rules which may be based upon it.

15. The Government of India will be glad to receive copies of any rules drafted in accordance with the instructions contained in this Resolution for incorporation in the Provincial Codes.

Madras.
Bombay.
Bengal.
North-Western Pro-
vinces and Oudh.
Punjab.

Central Provinces.
Burma.
Assam.
Ajmere.
Coorg.
Resident, Hyderabad.

ORDER.—Ordered, that a copy of this Resolution be forwarded to the Local Governments and Administrations noted in the margin for information and guidance.

Ordered also, that a copy be forwarded to the Foreign, Finance and Commerce, Home and Public Works Departments for information.

APPENDIX A.

Proposed Rules regarding the utilisation of forest produce as human food in times of scarcity.

Madras.—In localities where forest produce is utilisable as human food, every facility should be afforded by the Forest Officers to persons seeking such food in forest reserves.

Bombay—

When it appears to the Collector, in districts where edible fruits and roots are plentiful in forest reserves, that the privileges of collection enjoyed by wild tribes and special classes should, owing to failure of crops, be temporarily extended to all classes, he may so extend them, reporting to the Commissioner and giving the necessary instructions to the Divisional Forest Officers.

Bengal.—

00. When any considerable Government forest or waste land exists in a tract affected by scarcity or famine, and such forest or waste land contains, in the opinion of the Commissioner of the Division, an important supply of forest produce utilisable as human food, and not available to the neighbouring population, it shall be the duty of the Commissioner to arrange for the temporary withdrawal of all restrictions tending to exclude persons in distress from the full benefit of the natural products of the forest or waste land.

01. If such forest is in part or in whole reserved or protected forest, and subject to rules and regulations under the Forest Act which do not admit of the edible forest produce being utilised by the neighbouring population free of charge, and to the extent that the Commissioner may consider necessary, he shall apply by telegraph to the Local Government for permission to suspend, for the time being, the operation of any such rule or regulation in so far as it may conflict with the objects in view:

Provided that permission shall not be given in either of the above cases to kill any animal of which the destruction is prohibited by law throughout the year.

Provided also that no such concession shall be held to permit any damage by fire or by a negligent or wasteful process of obtaining the produce sought after.

02. When the Commissioner shall have obtained permission to open any such Government reserved or protected forest, not already available to the neighbouring population in this respect, for the unrestricted collection and removal of edible forest produce, he shall proclaim the nature of the concession in all the surrounding country, specifying the areas to which the concession applies and the kinds of produce which the people may temporarily

collect and remove for their personal use. He shall similarly, when there is no longer occasion, in his opinion, to continue the concession, proclaim with the same publicity its discontinuance from a date to be specified in the proclamation.

03. The Divisional Forest Officer shall obey any order communicated to him by the Commissioner of the Division, through the Collector or Deputy Commissioner of the district, in relation to the use and management of Government forests under his charge in times of scarcity or famine; and shall be responsible for any unnecessary and vexatious interference on the part of his subordinate staff.

APPENDIX B.

9. A suggestion that a District Officer should be allowed considerable liberty in the employment of higher paid agency than ministerial officers, when he has to depute subordinates suddenly to make enquiries regarding scarcity, has the Lieutenant-Governor's approval. His Honour believes that trustworthy reports from intelligent officers on the first indications of failure of crops are well worth the additional expense incurred on them. Nor should a District Officer be hampered in the entertainment of such establishment as he may find to be necessary. It should not, therefore, be requisite to obtain beforehand the authority of Government mentioned in section 148 of the Code, and this might be made clearer in that section.

IV.

Extract from the Proceedings of the Government of India, in the Revenue and Agricultural Department (Famine),—Circular No. 5—48, dated Calcutta, the 2nd March 1892.

READ —

Government of India Circular No. 90 F., dated 23rd June 1885.

RESOLUTION.—In Circular No. 90 F., dated 23rd June 1885, the Government of India prescribed certain rules to be observed in reporting the condition of tracts suffering from failure of crops, and it was intimated in the second of the rules that when apprehension arose that relief measures might have to be undertaken, the weekly telegraphic reports should be supplemented by monthly written reports.

2. The main object of the rules was that the Government of India might receive early and continuous information of the progress of events on the occurrence of scarcity and famine, and a great part of the information called for was of such a character as to admit of its tabulation in a simple form. But it has been found that in practice provincial authorities have, in their natural anxiety to supply as complete information as possible, so expanded the monthly reports as to make their submission at an early date after the occurrences to which they relate impossible. The reports have thus often become a useful historical summary of events, but do not fulfil the object with which they were prescribed of supplying the Government of India with timely information.

3. The rules themselves are also defective and do not comprise all the matters upon which the Government of India require to receive information.

4. His Excellency the Governor General in Council desires, therefore, that the rules circulated in 1885 should be cancelled, and the rules appended to this Resolution substituted for them. The information called for in the rules is of a simple and concise character, and the Government of India request, accordingly, that strict punctuality may be observed in the submission of the reports.

Govt. of Madras.
" Bombay.
" Bengal.
" North-Western Provinces
and Oudh.
" Punjab.

C. C., Central Provinces.
" Burma.
" Assam.
" Coorg.
" Ajmere-Merwara.
Secretary for Berar to the
Resident, Hyderabad.

ORDER.—Ordered, that a copy be forwarded to the Local Governments and Administrations noted in the margin for information and guidance.

Ordered also, that a copy be forwarded to the Foreign Department for information and for communication to Political Officers of Native States.

Ordered also, that a copy be forwarded to the Finance and Public Works Departments for information.

Rules for Famine Reports required by the Government of India.

WEEKLY TELEGRAMS.

- I.—The first indication of failure of harvest or scarcity in a Province should be communicated in the weekly telegraphic “weather and crop” reports.
- II.—When apprehension arises that relief measures may have to be undertaken, the telegraphic reports should be supplemented by monthly written reports.
- III.—When relief measures have been actually commenced, the weekly telegrams should state the aggregate number of persons, without details of age or sex, (1) on relief works, (2) on gratuitous relief on the last day of any week for which district reports have been received.
- IV.—Although statistics are not required under Rule III for each district, but only for the Province as a whole, it will be convenient that when distress occurs in entirely different parts of a Province, affected districts in each part should be grouped together and separate statistics telegraphed for each group.
- V.—The inclusion of a district for the first time in the affected area, whether of a Province or group, and similarly the exclusion of a district from the affected area, should be communicated in the weekly telegrams.

MONTHLY REPORTS.

- VI.—The monthly report should ordinarily consist of two tabular statements in the forms A and B appended.
- VII.—The statements should be accompanied by a map in which affected tracts should be approximately indicated by a blue colour in two shades—light blue signifying slightly affected and dark blue seriously affected tracts.*
- VIII.—In the page of remarks attached to the monthly statement A, the wages prescribed on relief works and the data on which they have been determined, should be noted; any changes should be recorded and explained in subsequent reports.
- IX.—The report for each month must be despatched to the Government of India, whether complete or incomplete, in the first half of the next month, either by the Government of the Province, the Board of Revenue or other revenue authority as the Local Government may determine. Deficient information may be subsequently submitted either in the next monthly report or in a separate letter.

GENERAL REPORT.

- X.—As soon as the information is available, a general report should be submitted, giving an account of the economic condition of the affected districts or groups of districts in ordinary times, and indicating the crops affected and the extent to which they have suffered; the contingencies on which the probable duration of distress depends; the position of the affected area as to local trade, food-supply and communications; and any other general information likely to be instructive. A fresh general report is required for all new districts or groups of districts which may become affected subsequent to the submission of the first general report.

* Skeleton maps of uniform size and character will be supplied on indent, by the Imperial Survey Department for the purpose of this rule.

SPECIAL REPORTS.

XI.—The following matters should be separately represented, as occasion may require, in special reports, which should be submitted in sufficient time to enable the Government of India to make any provision of funds or establishments which may be necessary:—

A.—If there is any reason to believe that the Provincial funds will prove insufficient to meet the exigencies of famine, the extent to which Imperial aid is likely to be required.

B.—The extent to which the suspension or remission of land-revenue may be considered necessary.

C.—The extent to which the Provincial staff requires to be increased by drafts from Imperial Departments or otherwise.

XII.—Any reports other than those required by these rules which may be prescribed by the Local Governments for their own information need not be submitted to the Government of India otherwise than for exceptional reasons.

(To be submitted to the Government of India within the first half of the next month.)

SCOUTS FOR WHOM RELIEF WAS PROVIDED IN GAZETTED PROGRAMME OF RELIEF WORKS.			MEMBERS FOR WHOM RELIEF CAN BE PROVIDED BY WORKS REMAINING ON PROGRAMME ON DATE OF REPORT.			EXPENDITURE SINCE APRIL 1st, 18			ADVANCES SINCE APRIL 1st UP TO END OF MONTH UNDER		REVENUE SUSPENDED.
Date of Gazette.	On large works.	Others.	On large works.	Others.	Date up to which account is made up.	Rupees omitting 000s.		Rupees omitting 000s.	Land Improvement Act.	Agricultural Loans Act.	
						On relief works.	On gratuitous relief.		Rupees omitting 000s.	Rupees omitting 000s.	Rupees omitting 000s.
3	1	5	6	7	8	0	10		11	12	13

Extract from the Proceedings of the Government of India in the Revenue and Agricultural Department (Famine),—Circular No. 6—44, dated the 17th March 1892.

READ—

Government of India Resolution No. 44 F., dated 9th June 1883.

„ „ „ „ 25 F., dated 10th September 1891.

Read also—

Government of India Resolution No. 5-48, dated the 2nd March 1892.

RESOLUTION.—The Government of India have found indications in reports on famine relief received during recent years from various provinces that the policy of the Famine Commissioners, which was endorsed both by the Government of India and Her Majesty's Secretary of State, on the subject of wages or relief-works, has not always been fully appreciated. In view of the probability that there may be, during the next few months, a material expansion of relief-works in some parts of the country, and of the possibility that, in the event of the failure of the next monsoon, considerable demands may be made on the Government of India for funds to relieve distress, the Governor General in Council considers it advisable that the subject should be carefully considered, in view of the fact that in the case of widespread and severe famine any material departure from the principles of the Famine Commissioners' report may lead to financial embarrassment.

2. The views of the Famine Commissioners on questions relating to the employment of labour on relief-works are embodied in paragraphs 110 and 111 and again in paragraphs 126 to 136 of Part I of the Report. In the first place it should be noted that a distinction is made in these paragraphs between various classes of labourers. Although the different classes are not brought under any close definition, it is clear from the wording of paragraph 131 that labourers were to be classified according to their capabilities and that a broad line was intended to be drawn between able-bodied labourers doing accustomed work and able-bodied labourers doing unaccustomed work, and it may be noticed that in paragraph 132 the first class appear to be distinguished under the term "both able-bodied and skilful." "One or more piece-work gangs might," it is said, "be attached to each large relief work, in which all who are both able-bodied and skilful labourers should be classed and to which those who are improving in strength and skill may, if they wish it, be transferred. The rates should be so fixed (with reference to the price of food-grain) as to give a little more than the ordinary daily wage in return for the quantity of work likely to be performed."

3. The ordinary daily wage alluded to in this passage is not the daily wage which may be earned by a labourer on a public work in ordinary times, but the ordinary daily wage dealt with in the preceding paragraph (131), which is to be "adjusted from time to time so as to provide sufficient food for the labourer's support, allowing him one day's rest in the week." It is clear, therefore, that the intention of the Famine Commissioners was that skilled able-bodied labourers should not be permitted to perform an unlimited or indefinite amount of piece-work on a famine relief-work. The opposite view has been sometimes held. But it is obvious that any material departure from the Famine Commissioners' rule would result in unnecessary expenditure, and a rapid exhaustion of the programme of works available, for not only would greater numbers of labourers be attracted to the relief-works by a prospect of the high profits which unlimited piece-work would offer, but also the work performed by each labourer would be greater. The object of the Famine Commissioners, *viz.* to restrict the admission on relief-works to those who are compelled by necessity to come to them, would in fact be frustrated.

"Some safeguards," they urge in paragraph 110, "are essential in the interests of the destitute people no less than of the public treasury; and they are best found in laying down certain broad, self-acting tests by which necessity

may be proved and which may, independently of any other rule of selection, entitle to relief the person who submits to them."

"The chief of these tests," they continue in paragraph 111, "and the only one which in our opinion it is ordinarily desirable to enforce, is the demand of labour commensurate in each case with the labourer's powers in return for a wage sufficient for the purposes of maintenance but not more;" and they point out again (in paragraph 132) that "it is not expedient to add to the outlay on relief or to the consumption of food beyond what is essential, and that no object is to be gained by the early completion of any work put in hand."

And again, in paragraph 127, it is intimated that, although State employment should be offered promptly, yet care must be taken "that the cost to which the community as a whole is put by the employment of persons in want is no more than the case strictly requires."

4. On the 9th of June 1883 the Government of India, after consulting Local Governments, circulated with an explanatory Resolution a Provisional Famine Code, based upon the recommendations of the Famine Commissioners, for the guidance of Local Governments and Administrations in the preparation of the Provincial Codes which they were invited to frame. It was explained that the scheme of the Famine Commissioners for the provision of employment of labour on relief-works was accepted by the Imperial Government, and the principles which they laid down were generally embodied in the Provisional Code.

5. Relief-works were in this Code required to be distinguished as—

- (I) Civil Agency works; and
- (II) Professional Agency works;

the former whether professionally managed or not being under the control of the district authority, and the latter under the control of the Public Works Department. Labourers were, reading sections 39 and 71 together, divided into four classes—

- A.—Able-bodied persons accustomed to labour of the kind required at works coming under class II.
- B.—Able-bodied persons accustomed to labour, but not to labour of the kind required on works under class II.
- C.—Able-bodied persons not accustomed to labour.
- D.—Persons not able-bodied, but fit for light employment of the kind required at works of class I.

Labourers of class A were (sections 71 and 72 of the Code) eligible for employment on Professional Agency works and for treatment as ordinary able-bodied labourers in public works. All others were to be dealt with under the rules for Civil Agency works.

6. Chapter X of the Provisional Code, which dealt with wages and rations on relief-works, prescribed a "full ration" sufficient to keep able-bodied labourers in health and strength, leaving it to Local Governments to suggest such modifications as might be required by the circumstances of each province. The "full wage" was defined as the amount of money which at the current prices is sufficient to purchase a "full ration." Section 132 laid down that payment for labour on Professional Agency works might be made at the rate ordinarily given under the rules in force in the Public Works Department, provided that the sum which a labourer can ordinarily be expected to earn by a fair day's labour shall in no case be less than the "full wage." This rule applied to labourers of class A only, since all other labourers were brought by section 72 of the Code under the rules for Civil Agency Works. It will be observed, however, that the wording of the rule prescribed the "full wage" as a minimum only, and placed no restriction on the amount which might be earned by a class A labourer at departmental rates for piece-work. An opening was thus left for a departure from the intention of the Famine Commissioners, that even skilful and able-bodied labourers should only receive "a little more than the ordinary wage," which would, in the terms of the Provisional Famine Codes, mean "a little more than the full wage." The object of the framers of the Code was, however, not to controvert the principles laid down

by the Famine Commissioners and accepted by the Government of India, but to prevent undue restriction being placed on the progress of Public Works, of which, for special reasons, the early completion might be desirable. This has not been generally understood. Consequently, the result of the absence of any positive restriction on the wages of class A labourers has sometimes been that on earthwork, which is, wherever it can be provided, the most usual as it is the most appropriate relief-work, ordinary agricultural labourers have been considered to be sufficiently accustomed to the kind of labour required at the work to entitle them to be brought under class A, and to be given any amount of piece-work that the Public Works officer in charge of the work might deem to be desirable to secure the rapid and effective progress of the work itself. The principles laid down by the Famine Commissioners have thus been transgressed.

7. It has, on the other hand, occurred that the intention of the Famine Commissioners, that all skilful and able-bodied labourers should, for the reasons given in the passage quoted in paragraph 2 of this Resolution, receive a small margin above the full famine wage, has not been sufficiently appreciated; nor was this intention explained with sufficient distinctness in the Provisional Famine Code. The opportunity is now taken to give clear expression to the opinion of the Government of India that this consideration should be applied to all labourers of class A, and, subject to the remarks regarding the classification of ordinary cultivators which are made below in paragraph 10 of this Resolution, also to labourers of class B; money-wages and tasks being so adjusted from time to time as to admit of the labourers receiving "a little more than" the equivalent of the "full ration" of the Code.

8. In order, on the one hand, to secure the object which the framers of the Code had in view of preventing any undue restriction on the progress of a public work which is required as such independently of its use as a relief-work, and on the other, to prevent any transgression of the principles of the Code, which requires that no remuneration should be given to a labourer on a relief-work materially in excess of the amount sufficient to maintain health and strength, it is desirable that, where this has not already been done, a rule to the following effect should be incorporated in the Provincial Code:

When a public work for which provision had already been made in the ordinary Public Works Budget of the year is included in the sanctioned list of Professional Agency works, the Local Government shall decide, in the event of its being utilised as a relief-work, whether any portion of it is of such a character, or requires to be executed with such urgency, as to demand the employment of ordinary public works labour at full piece-work rates. Such portion shall be separated from the portion utilised as a relief-work and shall not be opened to labourers admitted on the work simply for purposes of relief. On the portion retained as a relief-work the wages of able-bodied labourers, however skilled, shall not exceed the amount in money which is equivalent to a little more than the full famine wage.

9. Another direction in which a departure has been, in some cases, permitted from the principles laid down in the Provisional Famine Code, is in the expansion of money-wages for the purpose of providing a margin from which relief may be given to children and infirm dependants by their able-bodied parents or guardians who labour on relief-works. This was prohibited in the Provisional Code on the ground that experience had shown that starving parents cannot in times of severe famine safely be entrusted with the feeding of their children. The Government of India are not disposed to admit any modification of the principle which confines payment of a wage to those who work, and restricts its amount to a liberal money-equivalent of the subsistence ration to which the worker is in each case entitled. Any relaxation of the rule must lead to irregularity and wasteful expenditure. A margin adequate for the support of sick or infirm dependants in cases where they exist cannot, if given without discrimination to all able-bodied labourers, be otherwise than sufficiently large to prove unduly attractive to those who are free from such encumbrances. The provision, therefore, of any such margin must tend to destroy the value

of the test which it was one of the main objects of the Famine Code scheme that relief-works should provide.

Recent experience in the Madras Presidency has tended to confirm the view that the system of famine kitchens and poor-houses for the support of the young and infirm is sound. In the event of serious famine the Government of India would be sorry to see it abandoned. But they are not prepared to insist absolutely on its adoption, especially in the earlier stages of distress, in those provinces where the proper relief of dependants by their guardians can be guaranteed; and if it is the wish of any Local Government or Administration that the original prohibition of relieving children and others through their parents and guardians should be modified or withdrawn, a separate communication on the subject may be submitted to the Government of India. But it must be distinctly understood that any allowance made for the support of dependants can only be permitted to those labourers who actually undertake the relief of their children or dependants; that it must be based upon a precise scale regulated in accordance with the number of dependants; and that all payments made for the purpose indicated should be shown in the accounts under the head of gratuitous relief.

10. Turning now to the subject of the division of labourers into classes, the Government of India find that much variety of practice exists in different provinces. This is partly due to a difference in the scale of famine rations and wages assigned to each class, and partly to a difference of opinion as to the quality of the labour of those admitted to relief-works. The work most frequently given for purposes of relief is earthwork. It is argued by some of the authorities who deal with famine-relief that all agricultural labourers, including ordinary cultivators—men, women and children—are skilled and able-bodied; or, in the words of the Provisional Code, that they are able-bodied labourers accustomed to labour of the kind required at the works. The bulk of the labourers are thus brought into the highest class, *i.e.* class A of the Provisional Code. If this view be adopted and acted on, it is evident that the margin above a subsistence wage, or, to use the words of the Famine Commissioners, the “little more than the ordinary daily wage,” must be kept within narrow limits, and that wages should be carefully revised with every fluctuation of prices. If, on the other hand, as is the case in some provinces, only a very small percentage of labourers, such as old public works employes or others who have had professional experience, are admitted into class A, a more liberal margin may be permissible for that class, provided that, on the other hand, the wage of the B class is kept in closer approximation to the level of the subsistence wage of the Famine Code. In order that some general uniformity may be secured in the administration of famine-relief in different provinces, it is necessary that the Government of India should be provided with precise information as to the system on which classification of labourers is based, and as to the relation between the money-wage actually given and the money equivalent of the famine ration at current prices. Rules under which such information is to be periodically submitted are prescribed in Resolution No. 5, dated 2nd March 1892, on famine reports.

11. To sum up. Following the Famine Commissioners' recommendations labourers on relief-works may be classified according to their capability for work. The classes adopted in the Provisional Code are A, skilful and able-bodied accustomed to the kind of work required; B, able-bodied accustomed to work; C, able-bodied not accustomed to work; D, Others. Classes A and B may receive a full wage, *i.e.* a wage equivalent to a ration sufficient to keep an able-bodied labourer in health and strength, together with a margin. The margin may be more liberal for class A when it contains a small percentage than when it is allowed to include a large percentage of able-bodied labourers accustomed to work. The wage of class C will not exceed the full wage, and should be determined in general accordance with the principles of sections 133 and 134 of the Provisional Code. The wage may be given wholly in cash, or partly in grain and partly in cash, but cash payments must be adjusted from time to time in accordance with prices of food. So much of a relief-work as requires to be pushed on for urgent reasons at a rapid rate should be removed from the list of relief-works and treated as an ordinary public work.

Govt. of Madras.	Chief Commr., Central
Do. Bombay.	Provinces.
Do. Bengal.	Do., Burma.
Do. N.-W. P. and	Do., Assam.
Oudh.	Do., Coorg.
Do. Punjab.	Do., Ajmere.
	Merwara.

Secretary for Bernar to the Resident at Hyderabad.

ORDER.—Ordered, that a copy be forwarded to the Local Governments and Administrations noted in the margin for information and guidance.

Ordered also, that a copy be forwarded to the Foreign Department for information and communication to Political Officers in Native States, and to the Finance and Public Works Departments for information.

VI.

Circular No. 7—48 F., dated Calcutta, the 18th March 1892.

From—J. W. P. MUIR-MACKENZIE, Esq., C.S., Under-Secy. to the Govt. of India,
To—Local Governments and Administrations.

In continuation of Government of India Circular No. 5 F. of the 2nd instant, I am directed to forward an extract from a telegram received from Her Majesty's Secretary of State for India, in which His Lordship details the heads under which he requires information to be furnished

"Please send detailed monthly report of distress and relief in each affected region, giving information regarding (1) extent and depth of distress; (2) food-supplies; (3) range of prices; (4) monthly death-rates; (5) how far increase due to famine; (6) starvation deaths if any; (7) number of persons employed on relief works; (8) gratuitously relieved; (9) adequacy of relief measures; and (10) relief staff."

to him by the Government of India in monthly famine reports. The supply of information has been provided for in the rules and forms of report communicated in the Circular Resolution above quoted with respect to all points excepting Nos. 4 and 5, the necessary particulars regarding which were asked for in my telegram of the 4th instant.

2. I am now directed to suggest that two additional columns may be added to Statement A, one for "Monthly death-rate" and the other for "Deaths due to starvation." Any observations that it may be necessary to make respecting the extent to which the increase in mortality is due indirectly or directly to famine should be included in the "Remarks" page appended to Statement A.

3. If, however, it is found that particulars under these heads cannot conveniently be submitted for the month under report in the first half of the month following, the Government of India would prefer that Statement A should not be modified, but that a separate mortality statement referring to the month previous to that dealt with in Statement A should be submitted.

VII.

Extract from the Proceedings of the Government of India, Revenue and Agricultural Department,—Circular No. 8—52, dated 21st March 1892.

READ—

Government of India Circular No. 6 G., dated 8th December 1881.

"	"	"	No. 57 F., dated 1st October 1886.
"	"	"	No. 65 F., dated 11th October 1887.
"	"	"	No. 25 F., dated 10th September 1891.

RESOLUTION.—In their Resolution No. 57 F., dated the 1st October 1886, the Government of India laid down the procedure to be followed in applying for sanction to railway projects intended to be utilised as famine relief-works.

2. In Circular No. 65 F., dated 11th October 1887, the Government of India called for an annual statement of the number of persons for whom it is estimated that employment on relief-works can be found in each district.

3. In paragraph 12 of their Circular Resolution No. 25 F., dated 10th September 1891, the Government of India adverted to the necessity of precise rules for the revision of lists of relief-works, and in the extract from paragraph 2 of Despatch No. 6 (Revenue), dated 14th January 1892, quoted below, the Secretary of State has, in commenting on this Resolution, drawn prominent attention to the importance of maintaining an efficient scheme of famine relief-works :—

"I regard the maintenance and yearly revision of a scheme of famine relief-works in every district as most important. And I suggest for your consideration that the Commissioner
* * * * should at the proper season either notify in the local Gazette or report to the Local Government the revision of the relief-works scheme for each district as soon as completed."

4. As there has been some irregularity in the character of the information supplied and action taken under the Circulars above quoted, and in order to give effect to the directions of the Secretary of State, the Government of India have framed the appended rules in supersession of previous instructions, and direct that they be incorporated with the Provincial Famine Codes.

ORDER.—Ordered, that a copy of this Resolution be forwarded to the

Madras.
Bombay.
Bengal.
North-Western Provinces and Oudh.
Panjab.
Central Provinces.

Burma.
Assam.
Coorg.
Ajmere-Merwara.
Hyderabad.

Local Governments and Administrations noted on the margin for information and guidance.

Ordered also, that a copy be forwarded to the Foreign Department for information and for communication to Political Officers of Native States, and to the Public Works and Finance Departments for information.

APPENDIX.

RULES FOR MAINTAINING A PROGRAMME OF RELIEF-WORKS.

Rules to be observed in ordinary times.

- I.—In accordance with the instructions of Resolution $\frac{6}{34-35}$ G., dated 8th December 1881, the Agricultural Department is responsible for collating information (1) as to the liability of each district to scarcity and famine, and (2) as to the general character of the protective measures which appear to be needed.
- II.—The Commissioner of the Division, or if there be no Commissioner the Collector, is responsible for deciding, after such communication with District Officers, the Public Works Department and the Agricultural Department as may be necessary, and subject to such rules as the Local Government may prescribe,—
 - (a) the number of persons for whom it is requisite that relief-works should be provided in the event of serious famine;
 - (b) the programme of relief-works which is to be adopted.
- III.—The estimate A and programme B will be annually revised, due regard being given (1) to the increased protection afforded during the past year by new irrigation works, improved communications or otherwise; (2) to the exhaustion of relief-works since the issue of the programme last published.
- IV.—Revised statements A and B shall be submitted to the Local Government not later than the 1st of May in each year.
- V.—A statement shall be submitted to the Government of India not later than the 1st of June in each year in the Form C appended to these rules.

Rules to be observed in times of famine.

VI.—When relief-works have been opened in any district, a supplementary programme shall, while such works are open, be submitted to the Local Government at the beginning of every quarter, that is to say, on the 1st August, 1st November and 1st February, showing—

(a) to what extent works on the published programme are exhausted;

(b) what new relief-works, if any, are added to the programme.

VII.—A statement in Form D annexed and revised in accordance with the supplementary programmes prescribed under Rule VI shall be submitted to the Government of India by the 1st September, 1st December and 1st March of each year.

VIII.—In deciding upon the character and number of works to be open at any one time regard shall be had to their prospective utility and to the possibility of their completion within or soon after the period of scarcity.

Special Rules for Railways.

(Applicable also to other works requiring Imperial sanction.)

IX.—A Railway project should not, except for grave reasons, be included in a programme of relief-works in view—

(1) of the small ratio which the expenditure on unskilled labour bears to the total cost of a railway,—about one-third of the whole cost being incurred in England, and of the balance only a small percentage being spent on unskilled labour;

(2) of the large financial liabilities which the commencement of railway works involves;

(3) of the loss which may be incurred if, after being commenced as a relief-work, the project or alignment may be subsequently abandoned or condemned.

X.—When for reasons considered sufficient it is desired to include a railway project in the programme of relief-works, a report should be submitted to the Government of India in the Revenue and Agricultural Department, showing—

(a) the liability of the districts through which the railway passes to famine;

(b) the advantages of the railway as a permanent protection of the districts affected by it against famine;

(c) the number of persons for whom it is requisite that relief-works should be provided in the event of serious famine;

(d) the number that can be provided for by works other than the railway;

(e) the reasons why the railway is required as a relief-work in supplement or preference to other works;

(f) the number of persons for whom work of suitable kind can be provided for by the railway;

(g) the proportion of the cost of such relief-work to the whole cost of the line;

XI.—If the railway or any part of it is accepted by the Government of India as admissible in the programme of relief-works on general grounds, the necessary reconnaissances or surveys should be undertaken and the alignment submitted to the Government of India in the Public Works Department and their approval obtained to the project before it is finally entered in the programme of relief-works.

XII.—If the alignment is approved, measures should be taken to secure the land required for the railway.

XIII.—If after the inclusion of the project in the programme it should at any time be in the opinion of the Local Government desirable that the railway should be utilised as a relief-work, a report should be submitted to the Government of India in the Revenue and Agricultural Department, setting forth the reasons why the work should be commenced.

XIV.—In the event of such sanction being accorded, the Local Government should transmit punctually and regularly to the Government of India in the Public Works Department the ordinary monthly and quarterly "Narrative Progress Reports," together with a memorandum showing the maximum, minimum, and average number of labourers employed and the total cash issues during the month, and should also communicate with that Department upon all professional and engineering questions, and submit all the usual estimates, accounts, etc., as in the case of a railway in progress under ordinary circumstances.

FAMINE STATEMENT C.

[To be submitted to the Government of India not later than the 1st of June of each year.]

N. B.—Numbers to be shown in “thousands.”

DISTRICT.	Population.	Maximum number of persons for whom relief may be required daily in the event of serious famine.	NUMBER OF PERSONS PROVIDED FOR BY RELIEF-WORKS DAILY FOR THREE MONTHS.			REMARKS.
			Large works for which professional agency is required.	Others.		
				Simple works which District Officers can carry out with ordinary staff.	Works for relief of agricultural population in neighbourhood of villages.	
1	2	3	4	5	6	7

*Note (a).—*This form is adapted from the form in use in the North-Western Provinces. But it is not necessary that the sub-division of "Others" in columns 5 and 6 should be made, and if it is preferred, only the total under the head of "Others" need be given.

Entries in columns 4, 5, 6 should be based on calculations similar to that given in the following example:—

Example (b).—If a large work is estimated to provide labour for 12,000 men for nine months at the ordinary rate of progress, the estimate for the purposes of column 4 will be 12,000.

If under pressure it can and is intended to be completed in six months, the estimate will be $\frac{2}{3} \times 12,000 = 18,000$.

If it can, and is intended to, be completed in three months, the estimate will be $\frac{2}{3} \times 12,000 = 36,000$.

(c). As it is desirable that in the event of serious famine those to whom relief is given should be concentrated as far as possible on large works, care should therefore be taken that the entries in column 4 should be materially larger than those in columns 5 and 6.

FAMINE STATEMENT D (*Supplementary to C*).

(To be submitted to the Government of India by 1st September, 1st December, 1st March, while relief-works are open.)

N. B.—Numbers to be shown in “thousands.”

DISTRICT.	Maximum number of persons for whom relief may be required daily in the event of serious famine.	NUMBER OF PERSONS PROVIDED FOR BY RELIEF-WORKS DAILY FOR THREE MONTHS.			REMARKS.
		Large works for which professional agency is required.	Others.		
			Simple works which District Officers can carry out with ordinary staff.	Works for relief of agricultural population in neighbourhood of villages.	
1	2	3	4	5	6

VIII.

No. 794-F.—48, dated the 23rd April 1892.

Office Memo. from—SIR E. C. BUCK, *Secretary to the Government of India, Revenue and Agricultural Department,*

To—*The Secretary to the Government of India, Foreign Department.*

With this Department's endorsement No. 5-F. of the 2nd ultimo the Foreign Department was furnished with a copy of the Resolution and Rules issued for the guidance of Local Governments and Administrations respecting the information which the Government of India desired to have furnished in times of scarcity and famine, and it was requested that the instructions, like those of 1885, might be communicated to the Political officers of Native States. It appears desirable, however, to define more accurately the action which these officers should take on the occurrence of scarcity in the States to which they are accredited.

2. This Department is aware that there are difficulties in obtaining for the Government of India the same information for Native States as for British territory, and does not fail to recognise the success with which, in compliance with the instructions circulated with the Foreign Department's Resolution No. 1713-I., dated 28th May 1885, Political officers have obtained, and the readiness with which Darbars have supplied, information relating to scarcity imminent or actually prevalent in the Native States. Some improvement, however, is desirable in the uniformity and fullness of the information supplied, as well as in the punctuality and regularity with which it is submitted. To secure these objects, the accompanying rules have been drafted in as simple a form as possible for communication, after consideration and approval by the Foreign Department, to Political Officers for their guidance in suggesting to Darbars and Rulers of Native States improvements in the administration of famine operations.

3. The suggestions embodied in the rules are not intended in any degree to supersede those issued by the Foreign Department in its Circular No. 2553-I., dated the 3rd August 1885, for the introduction of an abstract Famine Code into Native States. Any information which Political Officers can give as to the endeavours made to procure the introduction of such a Code, and the measure of success attained, will be acceptable.

Rules for Famine Reports relating to Native States.

- I.—The first indication of failure of harvest or scarcity in a State should be communicated by the Political Officer in the weekly telegraphic "weather and crop" reports.
- II.—The Political Officer should watch the progress of events, and when he considers that relief measures should be undertaken, will lose no time in advising the Darbar to that effect.
- III.—When the necessity for relief measures has been accepted by the Darbar, they should be invited to furnish information in the form attached to these rules. This information will be supplementary to the weekly telegrams.
- IV.—The Political Officer should endeavour to supply any deficiencies which may occur in the information recorded in the page of Remarks attached to the form.
- V.—The statement should be accompanied by a map in which affected tracts should be approximately indicated by a blue colour in two shades—light blue signifying slightly affected, and dark blue seriously affected tracts.*
- VI.—The report for each month should be despatched to the Government of India, whether complete or incomplete, in the first half of the next month. Deficient information may be subsequently submitted either in the next monthly report or in a separate letter.
- VII.—A special and early report should be submitted if there is occasion to apprehend that emigration on account of scarcity is taking place to British territory to any material or unusual extent. Information should be embodied in this report regarding the condition of the emigrants, and whether pressure is required to induce the Darbar to provide relief for those of its subjects who are otherwise likely to become dependent on British resources.
- VIII.—Any reports other than those required by these rules which may be obtained by the Political Agents for their own information or supplied to them by the Darbar need not be submitted to the Government of India otherwise than for exceptional reasons.

* Skeleton maps, of uniform size and character, will be supplied on indent, by the Imperial Survey Department for the purpose of this rule.

STATE.	Area.	Population in thousands.	Affected area.	Estimated population in thousands, of column 4.	Total number on relief-works on last day of month.	Numbers on gratuitous relief.
1	2	3	4	5	6	7

[ON REVERSE OF STATEMENT.]

Remarks to accompany Famine Statement for month ending _____,

[On this page should be recorded, very briefly, information as to private relief, village and poor-house relief, general character of relief-works, physical condition of people, deaths (if any) from starvation, food-stocks, importation of grain, general condition and prospects of affected area, changes in rates of wages, emigration or immigration, and other matters which will not delay the despatch of the statement beyond the 15th of the following month.]

IX.

Circular No. 12—48-F., dated Simla, the 23rd April 1892.

From—SIR E. C. BUCK, Kt., *Secretary to the Government of India,*

To—*The Secretary to the Government of Madras.*

„	„	„	<i>Bombay.</i>
„	„	„	<i>Bengal.</i>
„	„	„	<i>the North-Western Provinces and Oudh.</i>
„	„	„	<i>the Punjab.</i>
„	<i>Chief Commissioner, Central Provinces.</i>		
„	„	<i>Burma.</i>	

I am directed to forward copy of suggestions which have been adopted in the Foreign Department of the Government of India for obtaining information respecting famine and scarcity imminent or prevalent in Native States. I am to suggest that similar instructions be issued, *mutatis mutandis*, to officers under the jurisdiction of _____ and arrangements made for the timely transmission of the information required to the Government of India.

2. It appears that the Abstract Famine Code for Native States was not communicated to Local Governments and Administrations. I am now to forward a copy with the request that endeavours may be made to introduce a similar system into Native States dependent upon your Government, and that a report of the action taken may be furnished to the Governor-General in Council when convenient.

No. 11379-G., dated Indore Residency, the 23rd December 1899.

From—LIEUTENANT-COLONEL D. W. K. BARR, C.S.I., Agent to the Governor-General in Central India,

To—The Secretary to the Government of India, Foreign Department.

With reference to paragraph 2 of Captain MacMahon's letter No. 3253-I.A., dated the 8th December 1898, I have the honour to submit, for the information of the Government of India, a copy of a letter No. 559-I., dated the 16th December 1899, from the Political Agent in Bundelkhand, forwarding a report by Captain W. Ewbank, R.E., together with appendices and a scheme of famine relief works for States in the Bundelkhand Agency.

2. I concur with the Political Agent's opinion that Captain Ewbank's report is useful, and I consider that it reflects much credit on that officer. I also approve the Political Agent's suggestion to supply each State with a translation of the report affecting it, together with copies of the plans. As Captain Ewbank has now left the Central India Agency, it is impossible to obtain from him a record of protective works carried out or commenced. This will be more readily obtainable from the States concerned, and the Political Agent will be directed to call for the record from each State.

No. 559-I., dated Nowgong, the 16th December 1899.

From—CAPTAIN C. H. PRITCHARD, I.S.C., Political Agent in Bundelkhand,

To—The First Assistant to the Agent to the Governor-General in Central India.

With reference to letter No. 3253-I.A., dated the 8th December 1898, from the Government of India in the Foreign Department, to the Agent to the Governor-General in Central India, I have the honour to submit a report with appendices * and scheme of famine relief works for the States in the Bundelkhand Agency by Captain W. Ewbank, R.E.

* Copies of plans of individual works have not been sent.

2. The report is an useful one, and I propose to issue to each State a translation of Captain Ewbank's report as to projects (together with copies of plans) provided for the individual State in question.

3. I would note that Captain Ewbank's report does not furnish "a record of protective works which have been carried out or commenced," although this record was called for in paragraph 2 of the Foreign Department letter above cited.

Dated Chakrata, the 21st October 1899.

From—CAPTAIN EW BANK, R.E.,

To—The Political Agent in Bundelkhand.

I have the honour to forward a Scheme of Famine Relief Works for Bundelkhand. Report is attached. The plans are separate.

I was assisted in this work by Overseer Changa Singh of Ajaigarh State and Overseer Budh Singh of Chhatarpur State, both of whom worked very hard and willingly.

The Agency Sub-Overseer Narain Rao Ragunath also assisted me, and I had the following Khallasis:—

Karim Khan. | Mahadeo Prashad. | Ram Deen.

The work necessitated my being in camp continuously for 14 months. In addition to the above Munshi Nawazi Lal was with me and rendered me much help.

Bundelkhand Famine Relief Works Scheme.

1. This scheme is designed to fulfil as far as possible the requirements set forth in paragraph 60 of Captain Ramsay's Famine Report for the Bundelkhand Agency, 1897. A copy of this paragraph is appended—Appendix I.

2. It was not found possible to work on the exact lines suggested, *viz.*, "the provision of one or more large works and a number of smaller works in each pargana", partly because it was impossible to draw up all these projects in the time allotted, and partly because the ground in some parganas is quite unsuited for profitable irrigation works. Experience shows that when distress is severe the people will travel long distances in search of relief.

3. The scheme provides for local irrigation works designed as far as possible to irrigate land that is now out of cultivation, and includes two classes of works—

(a) the construction of bandhs,

(b) the utilisation of existing tanks, bandhs, or natural features to form local reservoirs for canals.

The advantages of bandhs have been dealt with in the Bundelkhand Famine Reports, also in a report on irrigation in Bundelkhand that I submitted in September 1897.

4. The works could be carried out for either of two purposes—

(a) As *protective* works, to be executed by contract as funds become available, to protect the crops against the partial failure of the rains so common in Bundelkhand.

(b) As *relief* works to be executed during famine.

5. The requirements for protective works are the irrigation of as much land as possible, combined with a fair return by the increased revenue on their cost.

Relief works require primarily sufficient earthwork to provide work for three months for all who are likely to require such relief. Masonry work, from the small number employed on it relatively to its cost, is not well suited for relief work. Thus, for relief work the construction of new bandhs with much earthwork and little masonry is more advantageous. The utilisation of existing tanks, and bandhs to feed canals requires more masonry and less earthwork, and so is better adapted for protective works.

The cost of the masonry in each work is shown in table.

6. In 1897-98 the general guide for Famine Relief in British India was contained in the Famine Code, North-Western Provinces and Oudh of 1896, and Circular No. 18, Public Works Department, "Rules and Orders for the conduct of Public Works Department Relief Works under the Famine Code." The latter Circular simplifies the rules given for the tasks and classification of relief workers, but in both these publications there is a good deal which cannot be rigidly enforced in Native States. Captain Ramsay has in his Famine Report drawn up simple forms which Native State officials can be expected to understand and render.

7. On the approach of famine the Political Agent has for the guidance of State officials either to ask them to read and follow the British India Codes, or must make extracts therefrom of the important points and issue these as *Rubakers*. In the former case the officials of small States will fail to grasp the essential points, and in the latter case the Political Agent is put to much labour,—labour increased by his probably having had no experience of famine, and at a time when he wishes to devote all his energies to touring about the country.

8. I have, therefore, venture to draw up a code based on extracts from the British India Codes and on experience of famine relief in Bundelkhand in the hope that this may prove of assistance. This code is intended to be used with the returns designed by Captain Ramsay which are contained in his Famine Report. Marginal references are given where paragraphs are extracts from the British India Codes.

9. This scheme is divided into the following parts:—

Part I.—General explanations of the surveys and calculations.

Part II.—Instructions for the execution of works.

Part III.—Famine Code for Bundelkhand.

Part IV.—Detailed descriptions of the works proposed.

PART. I

10. The surveys have been carried out as follows:—

Levels were taken and the work was marked out on the ground, also the land to be irrigated, and the lines for canals, if any.

A survey of this was made with chain and compass showing also sufficient existing features, villages, roads, temples, conspicuous trees, etc., to identify the site. In some cases no roads or villages were near, so in all cases trees readily recognisable have been accurately surveyed. *All such trees have the nature of the tree written against them on the plan* and are denoted by the sign.

The States were asked to put up masonry pillars to mark the points of the works, and in most cases I believe this was done. Time did not permit my remaining behind to see it done.

11. On the plans the method of recording boundary surveys has been followed: each plan has a table showing the bearings measured from true north from point to point of the work and the distances in feet. All distances shown throughout the report and plans are *in feet*.

12. My aim has been to endeavour to make the works as simple as possible. All existing features are shown on the plans in *black* lines. The proposed new works are shown in red lines; proposed canals in chain-dotted red lines thus———. Points are marked by reference figures thus 2, 4. The area to be flooded in bandhs, *i.e.*, the high-water contour, is marked by a dotted blue line thus——.

13. From the surveys the area to be irrigated has been measured in square feet and reduced to bighas. The area of a bigha varies in different States and in some States does not enter into the assessment of revenue which is taken as some proportion of the produce. The average area of a bigha is about $\frac{2}{3}$ ths acre and this value, *i.e.*, $2\frac{1}{2}$ bighas to the acre, has been taken throughout this scheme.

14. The revenue per bigha which it is estimated will be derived from the land to be irrigated has been decided by the experience of bandhs constructed during the famine of 1897, and varies in different cases according to the quality of the soil and with the results of the local inquiries as to the existing rates. Where the land was already under cultivation the profit calculated to accrue from the work was taken as the estimated increase of revenue.

15. The average rates are:—

- (a) R2-0-0 per bigha for uncultivated land to be enclosed in a bandh.
- (b) R1-0-0 per bigha for uncultivated land immediately below a bandh
- (c) R2-8-0 per bigha for uncultivated land to be irrigated by canal.
- (d) R0-8-0 per bigha water rate for land now cultivated, if irrigated by a canal.

The explanation of rate (b) is that land outside and below a bandh derives moisture from the underground percolation of water. The effect of damming up a large body of water is to raise what is called the spring level, *i.e.*, it raises the level of the water in neighbouring wells.

16. It may be of interest to remark here that I have seen channa crops in Panna State drying for want of winter rains, but where a bandh had been constructed, though only enclosing a few bighas, the line of where the water had stood was clearly marked by the area of green channa. I was informed that the large bandhs constructed in Ajaigarh State in 1897 yielded as much as R3 and R4 per bigha, so that the rates in these estimates may perhaps be taken as well under the mark.

17. The quantities of earthwork and masonry have been estimated, sections being taken where necessary. The estimates are not given in detail, but only the total quantities.

The rate for earthwork, if executed by contract for protective works, is taken from R3 to R4 per thousand cubic feet. The rate for masonry varies, but is generally taken as R10 per hundred cubic feet. In all estimates of cost 5 per cent. has been added for contingencies.

18. The cost of a work executed as a famine relief work depends on the number of workers, the average wage, and the task. It was impossible to get from the States reliable figures of the number employed on any particular work, and the complicated formulæ and tasks given in the Famine Codes of British India are useless for application to Native States.

In the Public Works Department Circular No. 18 of 5th December 1896 it is recognised that—

Part X, paragraph 46.

“the task depends entirely on what the digger can excavate. Whatever that quantity may be, there will always be enough fillers and carriers to dispose of it.”

The problem, therefore, is to ascertain an average task for all diggers and the average proportion of fillers and carriers to diggers, also the average wage.

19. Paragraph 38 of the Public Works Department circular referred to gives as the experience of British India that a gang of 60, after eliminating non-workers, will contain about 15 diggers, or 3 carriers to 1 digger.

My experience of famine work in Bundelkhand leads me to believe that in Native States the proportion of diggers to carriers is larger than 1 to 3. This is probable since in British India so many men have employment in Government service, railways, contracts, etc.

20. From enquiries and experience I have taken the following proportion for Native States :—

2 diggers { ^{One Phorra} „ ^{Pick-axe} } to five carriers.

21. The task varies in the revised rules for British India from 50 to 130 cubic feet per digger. I have assumed that on the average 2 diggers and 5 carriers will excavate and carry 100 cubic feet in a day. These are low tasks and are purposely taken low, because the exaction of proper tasks and good supervision cannot be relied upon in Native States.

22. It may be assumed that the famine of 1897 was as severe in Bundelkhand as any future famine is likely to be, and that the wages then given may be taken as a guide. The average wages were—

	R.	a.	p.
Diggers 6 pice or	0	1	6
Other workers 5 pice or	0	1	3
At this rate 100 cubic feet of earthwork would cost—			
2 diggers at R0-1-6	0	3	0
5 carriers at R0-1-3	0	6	3
	<hr/>	<hr/>	<hr/>
	0	9	3

Thus 1,000 cubic feet would cost 92·5 annas=R512-6.

I have therefore taken R6 per 1,000 cubic feet as the famine rate for excavation in estimates, or double the usual contract rate in my estimates.

Where from extra lift or lead I have placed the contract rate at R4 per 1,000 cubic feet the famine rate has been also double this, or R8 per 1,000 cubic feet.

23. It has not been considered necessary to increase the rate for masonry.

Works with much masonry should be, as a rule, executed as Protective Works before famine comes on.

24. The next point to calculate for a relief work is the quantity of relief it will afford. Proceeding on the foregoing assumptions, if 2 diggers and 5

carriers excavate and move 100 cubic feet in a day, they will move 1,000 cubic feet in 10 days. Let x then represent the number of thousand cubic feet of earthwork :

$2x$ diggers will excavate it in 10 days.

$\frac{2x}{9}$ " " 90 days, or three months.

Carriers are required in the proportion of 5 carriers to 2 diggers, and therefore the total workers, approximately, who will complete the work in three months are:—

$$\frac{2x + 5x}{9} = \frac{7}{9}x.$$

25. The profit or increased revenue estimated to be derived from a work has been calculated and also shown in separate columns as a percentage of —

(a) the contract cost,

(b) the famine cost.

26. No provision has been made in the estimate for the cost of repairs, but a small permanent gang should be maintained to repair leaks as soon as they appear, and to watch the waste weirs. It is advisable to have a heap of broken stone near waste weir, and if much scouring occurs in the bed of the weir to put down stone. Where the weir is cut through soft soil, it will be sure to scour, and after a year or two a masonry drop wall will be necessary.

27. On each plan the following information is given :—

State, name of work, and number of project.

Distances between bandh points.

Bearings of bandh points.

Levels of points.

Heights the bandh should be at the different points

Estimated increase of revenue.

Contract cost.

Famine cost.

Profit as a percentage on contract cost.

Profit as a percentage on famine cost.

Relief workers to complete the work in three months.

28. The table, appendix of this report, gives, in addition to bighas, revenue cost, profit, relief workers, the amount of the earthwork and the cost of the masonry, which two latter items form the criterion of the suitability or otherwise of a work as a relief work.

29. The detailed descriptions of the works are contained in Part IV of this report. When the execution of any work is contemplated, an extract from Part IV with the description of the work should be made and forwarded with the plan to the State concerned. The projects are all numbered consecutively, on the plans, in Part IV, and in the table appendix.

30. The total area to be irrigated by the proposed works amounts to 50,796 bighas.

The total contract cost amounts to	.	.	.	.	Rs.	6,59,367
" famine " " "	.	.	.	.	"	12,03,981
" increase of revenue	.	.	.	.	"	71,105
" number of relief workers for three months	.	.	.	.	No.	132,381
Average profit on Contract cost	.	.	.	.		10.7 per cent.
" " Famine " "	.	.	.	.		5.9 "

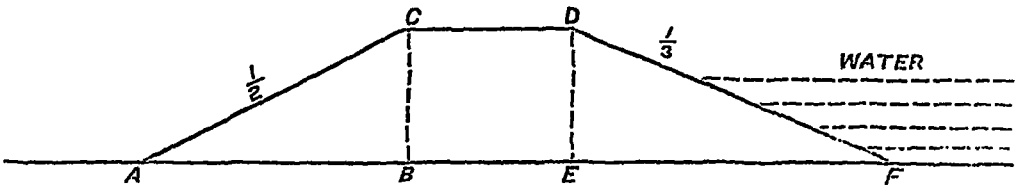
PART II.

31. The greater number of the works are surveys for new bandhs, and their constructions from the plans requires some explanation.

A bandh is an earthwork dam for holding up water, and in order that it should be strong enough, the following rule must be carefully followed:—

The width at the top must be equal to the height of the bandh and must be never less than 6 feet. The slope from the top to the ground should be $\frac{1}{2}$ on the inside or water side, and $\frac{1}{3}$ on the outside.

Thus, if the height is 12 feet, the width CD must be 12 feet.



$$CD = BE = ED$$

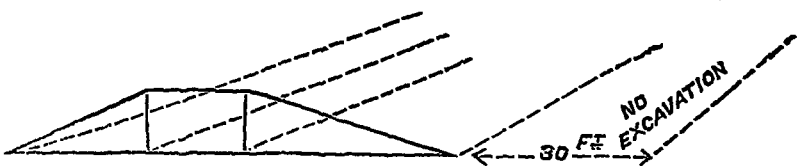
$$EF = 3 \text{ times } DE = 3 BE$$

$$AB = 2 \text{ ,, } DE = 2 BE$$

Thus $AF = 6 \text{ times } BE = 6 \text{ times the height.}$

32. The plans only show one line, for all that is necessary to know is the height the bandh is to be at each point and its direction. The line on the plan is always to be taken as the foot of the outside slope represented in the sketch above by the point A. Bandh points are marked on the plans by reference numbers thus 4, and the tables on the plans show how high the bandh is to be at each point. Knowing the height at any point, the other points BE and F of the figure above can be measured from A, the given point, and should be measured at right angles to the line of the bandh in the up slope direction. Four pegs, about 2 feet long each, should be driven into the ground at the four points so obtained and upright bamboos or lathis should be nailed to the middle points B and E. These uprights should be first measured and out, so that their tops should be at the correct height above the ground given for the height of the bandh. String should be then fastened to connect A to C, C to D, and D to F.

33. The earthwork must be excavated from *inside* the bandh, and no earth must be excavated nearer to the bandh than 30 feet. It will be convenient, therefore, to trace a line parallel to, and 30 feet from, where the foot of the inside slope will be, and to see that there is no digging between this line and the bandh.



34. The earth will be thrown in to the four lines which mark the bandh and first carried to furthest line.

Clods of earth should be broken up by aged persons and those unfit to walk, who should be given sticks for this purpose.

35. If there are old, rotten trees in the line where the earthwork of the bandh is to come, they should be dug out, roots and all, and the hole well filled and rammed. If this is not done, leakage will occur through the roots as the wood decays, and a breach may occur. The Darbars should make ample arrangements in good time for the following requisites:—

Picks and Phowras.

Baskets.

Treasure Chest.

Small coin.

Permanganate of Potash to disinfect wells.

Medicine and medical arrangements for large works.

Sirkhi matting for nurseries and temporary hospitals.

The following will be necessary for marking out works:—

Wood pegs, 2 feet to $2\frac{1}{2}$ feet long, 2 to 3 inches in diameter.

Lathis, 2 to 3 inches wide and $\frac{1}{2}$ inch thick.

Nails, 1 and $1\frac{1}{2}$ inches long.

Measuring tapes.

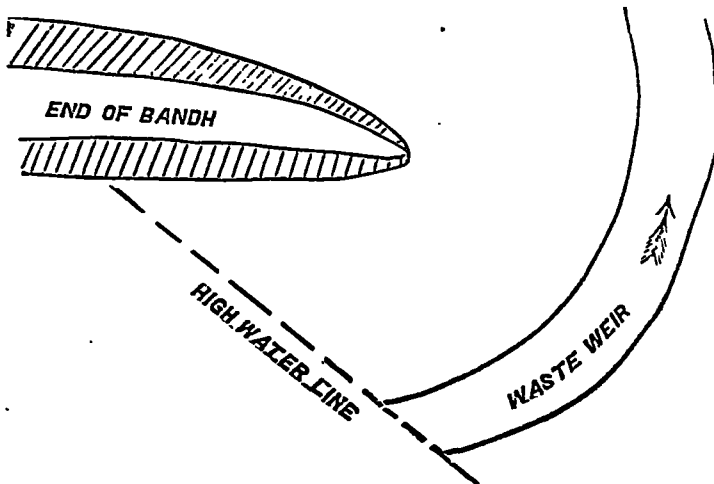
Plain white tape for marking *daghbels*.

String or twine.

Small saws and adzes and small axes (kulharies).

36. A flag should be provided to show new-comers where to come to be enrolled, and also flags to mark a boundary beyond which the people must be compelled to go for purposes of nature. This boundary should be at least 300 yards (900 feet) from the work.

37. Every bandh should have a waste weir which must be cut in the form of a broad ditch round and clear of the end of the bandh.



The level of the floor of the waste weir must be adjusted so that the water will begin to flow out by its channel when it reaches the high water level. This high water level should never be less than $3\frac{1}{2}$ feet below the top of the bandh.

PART III.

Famine Code for Bundelkhand.

Where the following paragraphs are based on extracts from British India Codes marginal references are given.

F. C. means Famine Code, North-Western Provinces and Oudh.

P. W. „ Circular No. 18 P. W.*—“Rules and Orders for the Conduct of Relief Works.”

Numbers with these letters refer to paragraphs in these publications.

38. The works for which designs and surveys are given in this scheme should be laid out and controlled by Darbar officials with the advice and assistance of the Political Agent.

There are, however, many small works which can be carried out to give villagers relief in the immediate vicinity of their villages. Such works are digging baolies (large wells), ordinary wells, deepening and clearing village tanks. Digging fields may also be possible if arrangements can be made with owners of villages and fields. Such works could be carried out by Jagirdars and Muafidars, assisted, where necessary, by *takavi* advances. They would not

* This is a circular of the North-Western Provinces Government. It is reproduced with minor amendments in Appendix D-XIV of the present Famine Code of the North-Western Provinces. The paragraphs have been renumbered, and the references to particular paragraphs are not readily traceable.

require Darbar supervision in detail, but the Darbar officials should satisfy themselves by inspection, and will be held responsible that the people are not starving. In this inspection work the European officers on famine duty will assist and report the results to the Political Agent.

39. When serious famine is probable, the Darbar should inform the Political Agent on the following points:—

- (a) The condition of the crops and the state of the people in the affected area.
- (b) Where scarcity or distress does exist,
- (c) Any unusual arrival of strangers or immigration of residents.
- (d) The condition of the grain stocks.
- (e) The failure of fodder for cattle, the presence of disease or of any unusual mortality among cattle.
- (f) The sources from which supplies of food may be obtained.
- (g) The proposed measures of relief.*
- (h) The probable number of persons for whom relief works will be necessary in case of serious famine.

40. The Darbar, in consultation with the Political Agent, should decide what larger works are to be opened under Darbar supervision. Such works would probably be some of those designed in this scheme, of which the Political Agent's Office would have the surveys and instructions.

41. When deciding on the work or works to be opened, regard should be had to their prospective utility, the number of workers for whom they are calculated to provide work, and to the possibility of their completion within or soon after the period of scarcity.

Earthwork must stop when the rains begin, although masonry work can continue, and the non-completion of a bandh when the rains begin must result in much damage to the work which has been done.

42. Every facility should be given for the encouragement of private trade in the supply of food. Bunniahs should be given huts on the relief works to encourage them to sell at the same rate as in the nearest town or large village. Prices should be written up and notified daily. If Bunniahs cannot provide sufficient grain, the Darbars must make arrangements to have food available for all relief workers.

Conduct of Relief Works.

43. There should be a Naib Tehsildar or Tehsildar in charge of works which have up to 6,000 workers. In addition are required—

- 1 Clerk to assist the Tehsildar in charge.
- 1 Sub-Overseer to lay out the work.
- 1 Ditto in charge of tools.
- 1 Tindal with 10 or 20 men paid as a permanent gang to assist in laying out the work.
- Disbursing vernacular clerks or gang mohurrirs, one for every 1,000 relief workers.
- 1 Jemadar for water arrangements with two or more assistants.
- 1 Jemadar of sweepers, with sweepers as required.

44. The number of tools required can be calculated from the number of diggers and carriers that the estimates give as required to complete the work in three months. Ten per cent. should be added to the numbers so calculated. In hard soil the digging tools should consist half of picks and half of phowrahs. In soft soil the proportion may be $\frac{1}{4}$ picks, $\frac{3}{4}$ phowrahs. There should be further reserves of tools at the important centres, and if the famine is severe the States should base their calculations on the assumption that one-quarter of the population will come on relief works.

For carriers arrangements must be made for a plentiful supply of baskets.

Some carpenters will be necessary on each work to mend pick handles and to make *thappies* for breaking up clods of earth.

45. Each work will want an iron safe.

* This should include proposals for small works as described in paragraph 38.

The Roorkee pattern $2\frac{1}{2}' \times 1\frac{1}{2}' \times 1\frac{1}{2}'$ is suitable. Wood chests, each $2\frac{1}{2}' \times 2' \times 2'$ lined with tin, will be required to convey small coin; one will remain on the work and the other will bring money to the work. If small coin is not available, wages should be paid in grain at the following rate:—

Diggers	.	.	.	.	.	.	.	.	14 chittacks.
Carriers	.	.	.	.	.	.	.	.	18 „
Children	.	.	.	.	.	.	.	.	10 „

It has been found sometimes an advantage to pay wages in grain. Fairly well-to-do persons came on to relief works for money, but when paid in grain they left the works.

Drinking water.

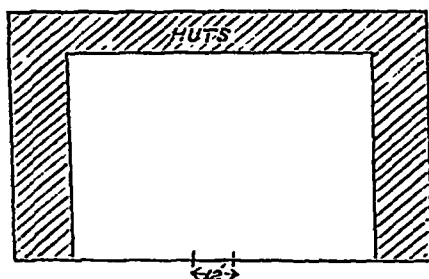
46. Care should be taken that filth does not fall into the wells. They should be guarded by the Jemadar for water arrangements before work commences, and the latter should have a sufficient number of Brahmans to draw and distribute water. He will want about 10 iron buckets (*dhols*) to draw water and kerosine oil tin to carry it. The tin should have an iron strap underneath it to strengthen it, and a handle. The Jemadar must take charge of wells and appoint certain Brahmans to each well, who will draw water for all. No other persons should be allowed to draw.

The water can be distributed from earthen *Gols* by a *pias* or small trough. The trough should be of iron. If a well that is not clean has to be used, it must be disinfected by means of permanganate of potash by Professor Hankin's method.

Field Hospitals.

47. Each work of more than 2,000 relief workers should have a field hospital with a compounder in charge unless there is a poor-house hospital near. If the latter is the case, and there is no field hospital on the work, then the poor-house hospital must be large enough to receive the sick of both the relief work and the poor-house.

A field hospital would be formed with a mud-walled enclosure and huts of mud and *sirkhi* matting. As the huts may catch fire, there should be one side of the enclosure without huts, this side to have a gateway 12 feet wide, thus:—



48. All grass hutting should be white-washed with a thin mixture of lime and clay. There should be a spare hospital ready for an epidemic.

When a hospital is abandoned, it should be burnt down, and if it has held patients suffering from epidemic disease, the site of the burnt hospital should be sprinkled with about 6 cubic feet of quicklime sifted evenly over the place. Water should then be sprinkled over the lime enough to wet it thoroughly.

Each hospital should have its own sweepers.

Hutting.

49. All workers whose homes are not near should be made to live on the relief works. For those who live on the works shelter can be made of screens about 6 feet long and $4\frac{1}{2}$ feet broad made of open bamboo trellis work strongly

tied and thatched with grass, thatch about $1\frac{1}{2}$ inches thick. Two screens will shelter 6 to 8 persons.

If the officials in charge have to live on a work, they should have tents or else small grass huts. The walls of these huts should be plastered with mud on the inside, and in order to protect them from fire, all surfaces should be white-washed with a thin wash of clay and lime.

Conservancy.

50. Relief workers should be made to go 300 yards away from the work for purposes of nature. There should be flags to mark the place and a chaukidar to see that the people go to the proper place.

Professor Hankin states that the waters of the Ganges and Jamna destroy cholera germs; therefore, if a work is near these rivers, the bodies of persons, who have died from cholera, may be thrown into them. In other cases where sufficient wood cannot be obtained to burn the bodies, they should be buried in holes at least five feet deep.

Organisation of Labour.

51. There are practically three classes of workers—

- (a) excavators,
- (b) carriers,
- (c) those unfit to dig or carry.

The last class may be usefully employed breaking up clods of earth with *thappies*. The very aged persons unfit for light work should be sent to the nearest poor-house.

A nursery should be provided for infants. If this is not done, the mothers will often carry their babies backwards and forwards. The usual custom was to give the mothers of infants one pice extra. It seems to be a better plan to feed the children in a nursery. I saw this carried out in a relief work in Ajaigarh State, and the plan answered well. The nursery should be a matting enclosure with matting shelters and with a woman in charge. I have often noticed women on works in fair condition while their children appeared to be starving, and I do not believe that the child gets much value out of the extra pice given to the mother.

52. When commencing a relief work the first thing is to lay it out. Instructions for this are contained in paragraphs 31 to 37 of this report.

Arrangements should be made for hospital, nursery, drinking water, flags for latrine. The tools should be collected in an enclosure of thorn bushes, and the man in charge should have his hut near the enclosure. A large red flag should be put up near this in a convenient place, and all people coming for work should be directed to this flag to have their names enrolled. Gangs of 60 should be made up, those in one gang to come from the same village as much as possible. Children under seven years of age should not be counted as workers.

53. A man should be appointed as mate to the gang which will then be put under a certain moharrir, and be given a distinguishing number. This moharrir will make a list of the relief workers on a form, Appendix of this report, which will be the Gang Register. It will have on it the distinguishing number, the name of the moharrir and the name of the mate in charge. Both the Tehsildar, or officer in charge of the work and the moharrir must have a note-book, and each must enter in his note-book the number of the gang, the name of the moharrir and the name of the mate.

When the names are all written on the Gang Register, the moharrir will give the mate an order for the proper number of tools, baskets and *thoppies*, and will note in his book the numbers of tools ordered. The mate will take the order to the man in charge of tools, exchanging it for the proper number

of tools. The man in charges of tools will keep a register of the tools issued, keeping the orders brought by mates as vouchers.

People who arrive in the afternoon should be given food and made up into gangs the following day. It is desirable to have as few persons unfit for work as possible on a relief work. Such individuals in need of relief are better looked after in a poor-house. The children of workers would of course remain on the work, and if under seven years of age, should be fed in nurseries. Aged or crippled persons, the relatives of workers, may be fed or paid a minimum wage. Persons unable to work with no relatives on the works should be sent as soon as possible to the nearest poor-house and should be fed until they can arrive there.

18 P. W.,
40.

54. The gang is the basis of all organisation, and should be kept as permanent as possible. Mates must not be allowed to admit new persons to their gangs without proper authority.

18 P. W.,
43.

The Task.

55. This comprises the setting out work and getting it done.

It must be distinctly impressed on all Darbars that the problem on relief works is to make the workers do a suitable quantity of work without overworking them. Workers will do as little as possible, and it is only by most careful attention and supervision on the part of the officials in charge that a proper amount of work will be obtained. If not obtained the work will cost the Darbar a great deal more and may not be completed in time to avoid loss when the rains come on.

Experience shows that there will always be enough fillers and carriers to carry what the diggers excavate, and as a rule fillers and carriers will work fairly well. Thus the amount of work done depends principally on the digger, any it is necessary to see that he does a fair day's work. The amount that he should be expected to do varies with the nature of the soil. One man should dig in a day—

- | | |
|---|------------------------|
| (a) In soft earth, such as sandy loam, from | 100 to 130 cubic feet. |
| (b) In medium earth, from | 80 ,, 110 ,, |
| (c) In hard earth and clay, from | 75 ,, 85 ,, |
| (d) In stony earth or dry black cotton soil, from | 50 ,, 85 ,, |

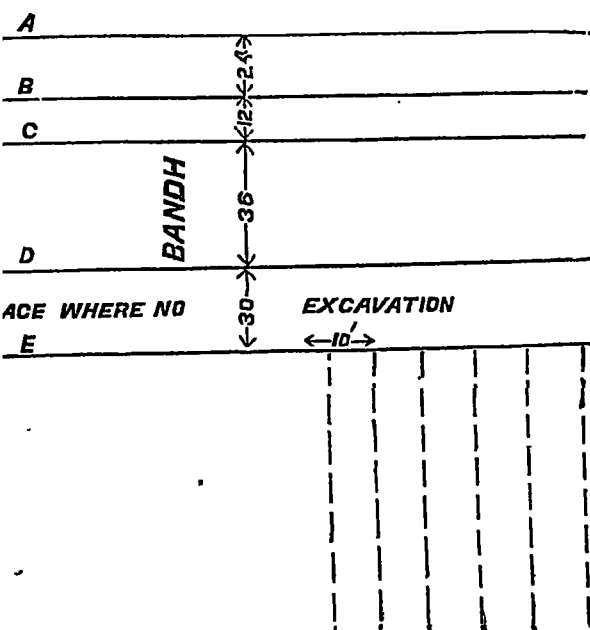
56. If possible, every task should be marked out separately, and that for the next day's work given out in the evening, so that workers can get to work as early as they like the next morning. It will be convenient to allot one task to two or three diggers, for one man uses a pick and one or perhaps two use phowrahs.

57. In order to make the carriers work well, if the earth has to be carried some way, *i.e.*, the lead is long, the custom has been followed on some works of paying the carriers a cowrie for each basket of earth and allowing them to exchange a suitable number of cowries for one pice. This works well when the diggers are excavating a plentiful supply for the carriers.

Laying out the Task.

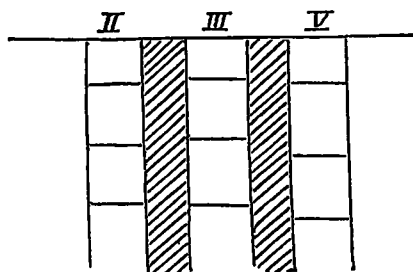
58. A *daghubel* should be made as explained in paragraph 33 to mark where the excavation is to begin. The earth should be excavated to a depth of 1 or 2 feet in flat ground. It will generally be more convenient to dig down 1 foot deep as carriers can walk across more easily. The greater number of works in this scheme are bandhs, so for an example let us suppose that tasks are to be marked out for a bandh on flat ground, that the bandh is to be 12 feet high, and that each digger is to excavate daily 50 cubic feet.

Four *daghbels* will have been traced on the ground and profiles put up as explained in paragraphs 32-33 to show where the earth is to be put and to what height it is to go. Let these lines be represented in the sketch below by *a, b, c, d* :—



diggers, 15 feet should be measured along the dotted line where the area of the task will be $15' \times 10' = 150$ square feet, which excavated 1 foot deep gives 150 cubic feet $= 3 \times 50$ cubic feet.

Alternate strips should be left to be excavated afterwards. Thus the shaded strips in the adjoining sketch would be left, and the strips I, III, and V would first be excavated, the tasks being shown. This makes it easier to see that the proper tasks are carried out and the strips left are convenient for the carriers to walk along. These intervening *bundies* can be excavated afterwards or the first strips I, III, and V can be deepened.



59. If the work is a new road or excavation to raise a road, the borrow pits from which the earth is taken must remain separated by bundies, for if all are formed into one long pit, water would run along it accumulating at some point which might breach the road.

60. In order to finish up the work there should be a gang called a finishing gang under a tindal or intelligent mate who should receive a monthly wage. This gang will smooth off slopes and correct errors. The workers in it should be men who understand work.

Wages.

61. The principle on which to calculate wages is that diggers should receive enough to buy 14 chittaks of the cheapest grain locally procurable, and carriers enough to buy 13 chittaks.

Appendix VIII of Captain Ramsay's Famine Report for Bundelkhand gives a form for the States to show their expenditure. On it is to be given the name of the cheapest grain, the price of 14 chittaks, the price of 13 chittaks, with columns to show the numbers in each gang receiving the various rates of wages and other expenditure.

The 14 and 13 chittack rate only provide for diggers and the carriers. Other wages should be calculated as follows:—

Mates of gangs and others in responsible similar positions	6	pies more 18 P. W., 59. than an ordinary digger's wage.
Diggers in special gangs, such as finishing gangs, price of	19	chittacks.
Ordinary diggers, price of	14	„
Carriers, price of	13	„
Men, dependants unable to work, price of	12	„
Women „ „ „ „ „	10	„
Working children, price of	10	„
Children under seven years of age, who do not work to be fed with	3	chittacks daily.

When a work is commenced each gang should be paid daily, but when Bunnials are established on a work or near, and a gang has been working some little time, it can be paid every other day or later twice a week.

Forms and Accounts.

62. The forms drawn up by Captain Ramsay in his Famine Report are to "assist the Chiefs to review the works of their officials and to understand where more works or more money is likley to be required, * * * to see at a glance whether the wages were proper on each work with reference to the price of grain, any fluctuations in the number of labourers, the works to which cash ought to be sent for the payment of labourers, and the works which were approaching completion." Para. 63, Famine Report, Bundelkhand.

Appendix III of this scheme gives a form proposed as a gang register for payment of workers. With Captain Ramsay's forms and this the Darbars should be able to fulfil efficiently the three objects:—

- (a) to pay on all relief works suitable wages,
- (b) to supervise work and expenditure,
- (c) to show clearly the requirements as regards money or new works.

63. It should be clearly understood that the gang register properly kept up is a safeguard against fraud and is the basis of all expenditure accounts. Petty officials who wish to defraud the Darbars will try to spoil registers and make difficulties in keeping them up, and as stated in the Government circular, "inability to keep the registers straight may almost be regarded as the sign of a rogue." At least a man incompetent to keep a register should be discharged. If the officer in charge cannot see that registers are properly kept and accounts checked, he also is incompetent and should be discharged. 18 P. W., 17.

The numbers can be checked by counting the number of gangs, then taking certain gangs and comparing the gang registers with the Moharrir's accounts which show payments to gangs. The officer in charge would have his accounts, which would be checked with the totals in the Moharrir's accounts and also checked with the entries to be made in the form given as Appendix VIII of Captain Ramsay's report.

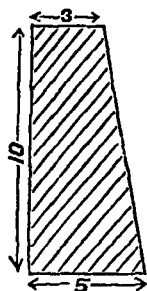
Appendix III of this report gives a proposed form of gang register with mates' list on the back.

PART IV.

AJAIGARH STATE.

No suitable sites for bandhs were found in the vicinity of Ajaigarh town. This portion of the State is too rocky. Favourable sites were found near Bachone and near Pararia Tola, which is on the Panna-Nagode Road. Six surveys have been made, four near Bachone and two near Pararia Tola.

PROJECT No. 1.—*Bachone Bandh*.—This work is to be about 1 mile east of Bachone village, whose drainage it will receive, as also the overflow from the large bandh which was constructed during the famine of 1897. The land to be enclosed in the proposed bandh is all good *purwa* soil and was all out of cultivation and covered in parts with *kans* grass. The waste weir should be made at the south end. The estimate provides for 40 feet length of wall, section as per margin, in the nullah, also for two sluices at Rs. 400 each.



Revenue.

194 bighas in the bandh at Rs. 2-8-0		Rs.
156 „ outside „ „ Rs. 1-0-0		=485
		=156
	TOTAL	641
	Rs.	
Contract cost	4,757	
Famine „	8,539	
Profit on Contract cost	18.4 per cent.	
„ „ Famine „	7.5 „	

Relief workers for three months—Numbers daily—

Diggers	264
Carriers	660
TOTAL	924

PROJECT No. 2.—This is a survey for a small bandh half way between Bachone and Bilhari, and to the north of the Bachone-Ajaigarh Road. The site can be identified by a large rock (see plan).

The estimate includes Rs. 300 for a sluice.

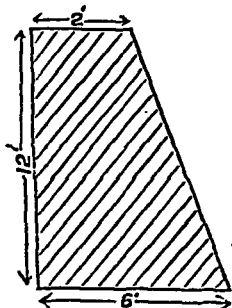
Revenue.

88 bighas in the bandh, at Rs. 2-8		Rs.
70 „ outside „ „ „ Re. 1-0		=220
		= 70
	TOTAL	290
	Rs.	
Contract cost	1,365	
Famine „	2,310	
Profit on Contract cost	21.2 per cent.	
„ „ Famine „	12.5 „	

Relief workers for three months—Numbers daily—

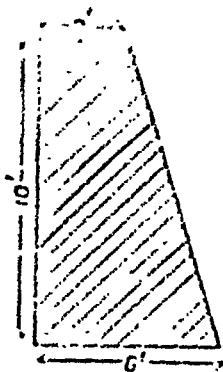
Diggers	66
Carriers	166
TOTAL	232

PROJECT No. 3.—*Makundpur Bandh*.—The site for this work is $2\frac{1}{2}$ miles north of Bachone. The existing tank (see plan) will serve as a guide for laying out the work. This tank will not be entirely emptied by opening the bandh sluices. The estimate allows for 50 feet length of wall, section as per margin, in the nullah also for two sluices.



The soil to be enclosed is all good *purica* soil and was all out of cultivation. That on the left bank of the nullah was covered with *kans* grass. The waste weir should be cut through rock round the south-west end of the

The tank when full would cover 122 bighas. No special waste weir is necessary as the water will escape over natural ground without damaging the bandh (see plan) when it reaches the high-water level. The ground to the



south below the tank is good soil and was all out of cultivation and covered with jungle. The ground to be enclosed in the tank was formerly the site of a village, and there is an old well close by. This work is not so suitable as a bandh for a relief work, but has this advantage that the lead would be long. The estimate allows for an earthwork bandh, 16 feet wide at the top all along with slopes of $\frac{3}{4}$ on the up, or water-side, and of $\frac{1}{2}$ on the outside. Also for 50 feet length of masonry wall section as per margin in the nullah. Rupees 1,000 has been allotted for a sluice.

The wall and sluice must be started from the first, and careful arrangements must be made that the whole of the work shall be completed before the rains come on, otherwise what work has been done will be washed away.

Revenue.

500 Bighas commanded, at Rs. 2-8	Rs.	=1,250
Contract cost	Rs.	5,612
Famine "		9,450
Profit on Contract cost	22½ per cent.	
" " Famine "	13½ "	
Relief workers for three months—Numbers daily—		
Diggers	200	
Carriers	500	
Total	700	

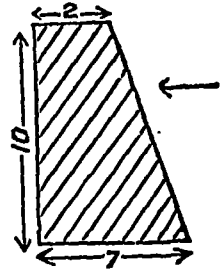
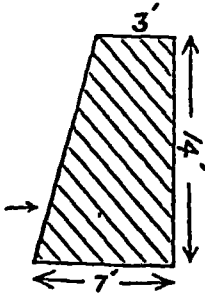
PROJECT No. 5.—*Nunahi Bandh*.—This bandh has been laid out to receive the overflow from Ramsay Sagar, the large bandh constructed in 1897, also to receive the drainage from Nunahi and Simri villages. The land to be

enclosed is good *purwa* soil and only a small portion of it was under cultivation.

The road restricts the land outside the bandh which might benefit, and so the bighas given outside the bandh represent the measured portion between the bandh and the road.

Small sketches of existing small bandhs are given to assist in identifying points 2, 3, 4 and 5.

The estimate provides for a wall 30 feet long, section as per margin, in the nullah between points 6 and 7 and for a wall 30 feet long, section as below, between points 11 and 12, also for two sluices at R400 each.



The small village or Purwa near point 12 is on raised ground, and the bandh has its east end, point 19, on a low hill.

The waste weir should be cut at the east end.

Revenue.

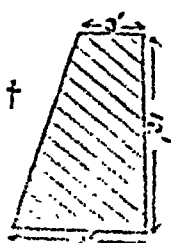
1,420 bighas in the bandh at Rs. 2-0	.	.	.	.	Rs.
590 " outside " " Re. 1-0	.	.	.	.	=2,840
					=590
					<hr/>
				TOTAL	3,430
				Rs.	<hr/>
Contract cost	.	.	.	.	16,452
Famine "	.	.	.	.	31,750
Profit on Contract cost	.	.	.	.	20.8 per cent.
" Famine "	.	.	.	.	10.8 "
Relief workers for three months—Number daily—					
Carriers	.	.	.	.	2,690
Diggers	.	.	.	.	1,072
					<hr/>
				TOTAL	4,752
					<hr/>

PROJECT No. 6.—*Pareri Bandh*.—The site for this bandh is about five miles north of Gonour and between the villages of Pareri and Bilha. It is astride of the Pareri-Kakretie Road and about $\frac{3}{4}$ of a mile from Pareri village.

The land to be enclosed was, with the exception of a few patches, all out of cultivation and consists of a mixture of *purwa* and black cotton soils.

A large part is covered with *kans* grass. The bandh will dam up two nullahs, the easternmost of which receives the drainage of Bilha village, which village will be about $\frac{1}{2}$ mile above the bandh. The road from Kakretie to Pareri and Gonour will have to be diverted round the east edge of the bandh, a work of little expense, as it is a mere track, but ramps will have to be cut to cross the nullah lower down.

The estimate allows for a wall 44 feet long, and section as per margin* in the westernmost nullah and for a wall 40 feet long section as per margin† in the Bilha nullah. Also for two sluices at Rs. 400 each.



Revenue.

						Rs.
1,074	bigbas in the bandh at Rs. 2-0	.	.	.	.	2,148
860	„ outside „ Re. 1-0	.	.	.	.	860
TOTAL						3,008

						Rs.
Contract cost	.	.	.	.	.	24,800
Famine	.	.	.	.	.	48,350
Profit on Contract cost	.	.	.	.	.	11.5 per cent.
„ Famine „	.	.	.	.	.	5.9 „

Relief workers for 3 months—Numbers daily—

Diggers	.	.	.	.	.	1,745
Carriers	.	.	.	.	.	4,363

TOTAL . 6,108

No.	PLACE.	Area.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers for 3 months.
						Contract cost.	Famine cost.	
		Bigas.	Rs.	Rs.	Rs.			No.
1	Bachone .	360	641	4,757	853	13.4	17.5	924
2	Near Bilahri .	158	290	1,865	2,310	21.2	12.5	232
3	Mokundpur .	576	1,056	6,393	11,745	16.5	8.9	1,309
4	Geherkha Nullah	500	1,250	5,612	9,450	22.2	13.2	700
5	Nunahi .	2,010	3,430	16,452	31,750	20.8	10.8	4,752
6	Parrei Bilha .	1,934	3,008	24,800	48,350	11.5	5.9	6,108
TOTAL .		5,538	9,675	59,279	1,12,144	...	...	14,025

Average profit on Contract cost 17.6 per cent.

„ „ Famine „ 11.4 „

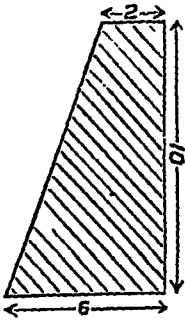
PANNA STATE.

This State is divided up into many parts widely separated. It was impossible in the time to visit all parts, and in many the ground is unsuited for the construction of bandhs. This is the case in the hilly country surrounding Panna town and in the hills from Shanagar to Mohodra.

Four projects have been made, one at Kakretie, two near Amanganj, and one at Pagara. This may seem a small proportion for such a large State, but it is one of the wealthiest in Bundelkhand and hardly requires so much assistance as the smaller States. The time taken in marching from place to place rendered it impossible to do more than give a few projects for each State.

PROJECT No. 7.—*Amanganj Bandh*.—The village shown on the plan Andiarkho is one mile south-west of Amanganj. The soil to be enclosed is a mixture of good soil and of kankar. All of it was out of cultivation except a few patches. The Amanganj-Mahewa Road would have to be diverted round the north end of the bandh.

The bandh will receive all the drainage of Andiarkho village, and also the overflow from another bandh proposed (Project No. 8). Should this latter bandh be also constructed, it must be made very strong at the nullah crossing where the estimate allows for it being made 25 feet wide at the top. The top at this part should be made up to 6 feet above high-water level, *i.e.*, up to level 100. Stone pitching should be laid at the foot of the slope where the stream will set in against the bandh.

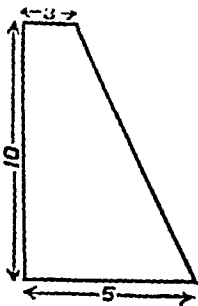


The estimate allows for a wall 120 feet long, section as per margin, across the nullah, also for two sluices at Rs. 400 each. Waste weirs should be constructed at both ends.

Revenue.					Rs.
582	bighas in the bandh at	Rs. 2-0	.	.	1,164
300	" outside "	Re. 1-0	.	.	300
TOTAL					1,464

					Rs.
Contract cost	.	.	.	.	15,288
Famine	"	.	.	.	28,211
Profit on Contract cost	.	.	.	.	9 5 per cent.
" " Famine	"	.	.	.	5.2 "
Relief workers for 3 months—Numbers daily—					
Diggers	.	.	.	.	982
Carriers	.	.	.	.	2,455
TOTAL					3,437

PROJECT No. 8.—*Andiarkho Bandh*.—The bandh will be south of Andiarkho village. To assist in identifying its site its plan shows a portion of the Amanganj bandh in dotted red lines. Points 9 to 12 are near the boundary separating Bijawar land, and for this reason the bandh could not be extended further in this direction. The waste weir should be constructed at the end near Andiarkho village, and the overflow will then fall into the Amanganj bandh.



The soil to be enclosed is called Harkawar. It was all out of cultivation and covered with *kans* grass.

The estimate allows for a wall 200 feet long, section as per margin, across the nullah, and for a sluice at Rs. 400.

Revenue.					Rs.
500	bighas in the bandh at	Rs. 2-0	.	.	700
120	" outside "	Re. 1	.	.	123
TOTAL					823

					Rs.
Contract cost	.	.	.	.	7,793
Famine	"	.	.	.	14,326
Profit on Contract cost	.	.	.	.	10.4 per cent.
" " Famine	"	.	.	.	5.7 "
Relief workers for 3 months—Numbers daily—					
Diggers	.	.	.	.	461
Carriers	.	.	.	.	1,163
TOTAL					1,604

PROJECT No. 9.—*Pagara Tank Canal*.—This project is to increase the storage in Pagara tank by building a small bandh at the north-east end, and by providing a puddle wall inside the tank all along the west side to prevent leakage; also to raise the masonry 2 feet all along the west side and to strengthen the south side with earthwork. Two hundred and seventy-three bighas can be commanded by providing a sluice and canal as shown. This does not include the land in the existing bandhs shewn on the plan north-east

of Pagara village. The puddle wall and sluice must be constructed before the rains come on. Levels are shown on the plan. The items of the estimate are:—

DETAILS OF COST.	Contract Cost.	Famine Cost.
Sluice	Rs. 800	Rs. 1,000
Puddle wall 900' × 4' × 6' at Rs. 10 per 1,000 . .	350	550
Raising masonry of tank 900' × 2' × 2' at Rs. 10 = Rs. 360	550	750
Earthwork behind this 900' × 20' × 2' at Rs. 4 = „ 144 } say		
Bandh	150	300
Strengthening tank, south side	500	1,000
Canal	50	100
TOTAL	2,400	3,700

The land now commanded returns now Rs. 20 revenue. The canal will raise the revenue to Rs. 2 per bigha:—273 bighas, at Rs. 2 = Rs. 546. The cost of the work is as above:—

Profit on Contract cost	20.2 per cent.
„ „ Famine „	14.7 „

The earthwork is as follows:—

	Cubic feet.
Sluice	17,000
Puddle wall	22,000
Raising bandh	36,000
Bandh	50,000
Strengthening south side	164,000
	<u>311,000</u>

Relief workers for 3 months—Numbers daily—	
Diggers	100
Carriers	200
	<u>300</u>

PROJECT No. 10.—*Garaya Tank near Kakreti*.—This is a project to restore an old tank by damming the nullah across the gorge at the points 2 to 4. The water at the proposed high water level in the tank will give a depth of about 13 feet over the greater part. When it reaches this high water level it will escape by a natural waste weir over the surface as shown on the plan.

The present tank is broken and wants repairs at A. A sluice is proposed at B, which could empty the tank down to 13 feet below high water level, thus giving 13 feet head of water. The storage is estimated at 31,340,000 cubic feet of water. South-west of point B is a valley with an existing bandh at the south end. By extending this bandh from D to C the valley and tank will also serve as a reservoir, its high water level being 6 feet below that of the upper tank. The high water level of the upper tank is marked + 0. The high water level of the lower tank is marked—6, i.e., 6 feet below 0. A sluice will be required from F to 7. The level of 7 is—13, that is, 13 feet below the high water level of the upper tank. Thus the upper tank will feed the lower tank through sluice B, and the lower tank will feed the canal through sluice F.

Another canal can, if desired, be constructed, from **C** to **M**, but the cultivators seemed to think that the land so commanded is unfit for canal irrigation.

A masonry or wood bridge to take the canal over the nullah will be required between **9** and **10**.

The storage of the lower tank is estimated at 11,380,000 cubic feet water.

Molesworth's Pocket Book, page 291.

Molesworth gives 200,000 to 250,000 cubic feet of water storage as being required per acre in Central India.

Taking the higher figure, and the bigha being assumed to be $\frac{2}{5}$ acre, a bigha will require 100,000 cubic feet of water storage and the total storage of both tanks will be sufficient for 427 bighas.

Canal **7** to **12** commands 226 bighas. It should yield Rs. 2-8 per bigha. It now yields Rs. 60 revenue. Assume the increase of revenue to be Rs. 500, I believe that the land to be commanded by Canal **C** to **M** could be improved by constructing small bandhs 1 foot high and by manuring, and then 200 additional bighas at least could be profitably cultivated.

The bandh across the gorge must be of masonry backed with earth. The estimate allows for a wall 144 feet long with foundations carried down to—28. The average thickness must be $\frac{1}{3}$ of the height. The earth behind it should be 25 feet wide at the top, then sloped down outside to the bed of the nullah at a slope of $\frac{1}{3}$.

The items of the estimates are as follows:—

The bandh in the gorge must be completed before the rains come on, also the repairs to the upper (Garaya Tank) and the sluice at **B**. The cost is given in the totals of the Table below—

Revenue Rs. 500.

Relief workers for 3 months—Numbers daily—

Diggers	:	:	:	:	:	:	:	:	:	150
Carriers	:	:	:	:	:	:	:	:	:	375
										<u>525</u>

This work is more suitable as a protective work than as a relief work.

ITEMS OF ESTIMATES.	Contract Cost.	Famine Cost.
<i>Bandh in Gorge.</i>	Rs.	Rs.
26,100 cubic feet masonry at Rs. 10-0-0		
per 100 cubic feet	Rs. 2,610	
192,000 cubic feet earthwork at Rs. 5-0-0		
per 1,000	" 60	
	<u>3,570</u>	<u>4,164</u>
<i>Sluice at (B).</i>		
11,500 cubic feet masonry at Rs. 10-0-0	Rs. 1,250	
24,000 " " earthwork at Rs. 6-0-0	" 144	
	<u>1,300</u>	<u>1,312</u>
<i>Sluice at (E).</i>		
15,120 cubic feet masonry at Rs. 10-0-0	Rs. 125	
25,000 " " earthwork at Rs. 5-0-0	" 1,512	
	<u>1,637</u>	<u>1,712</u>
Repair Garaya Tank—		
Masonry 1,350 cubic feet at Rs. 10-0-0	Rs. 135	
Earthwork 1,000 " " at Rs. 3-0-0	" 3	
	<u>Say 150</u>	<u>150</u>

ITEMS OF ESTIMATES.		Contract cost.	Famine cost.
<i>New bandh at (c) (d).</i>		Rs.	As.
Earthwork 200,000 cubic feet at Rs. 3-0-0	Rs. 600		
Sluice	200		
	800	800	1,400
<i>Bridge over Nullah (9) to (10).</i>			
Masonry 1,815 cubic feet at Rs. 10-0-0	Rs. 200	200	200
		7,657	8,950
		983	448
		8,040	9,398
<i>Add—5 per cent.</i>			
TOTAL			

Summary of Panna State.

WORKS.	Area.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, 3 months.
					Contract cost.	Famine cost.	
	Bighas.	Rs.	Rs.	Rs.			No.
Amangunj	882	1,464	15,288	28,211	9.5	5.2	3,437
Andiarkho	473	823	7,793	14,326	10.4	5.7	1,614
Pajara	273	536	2,400	3,700	20.2	14.7	300
Kakaretie	226	500	8,040	9,398	5.3	2.8	525
	1,854	3,323	33,521	55,635	...	...	5,876

Average profit on Contract cost 9.9 per cent.
 " " " Famine " 5.9 " "

BIJAWAR STATE.

A large part of Bijawar consists of low lying land bounded by hills to the south. It is well adapted for well irrigation, which is extensively carried out.

Three projects have been made for bandhs at Bijawar, Lakanwar, and Nengua, and flying levels were taken for a canal to be fed from Gora Tal.

PROJECT No. 11.—*Nengua Bandh*.—The site for this bandh is between Nengua and Pararia villages. The soil is described as *Harkawar* or second class *Mota* soil, and, with the exception of a few patches, it was all out of cultivation.

The land outside the bandh below points 14 to 18 is partly black cotton soil. By sinking wells north of the bandh the large tract of uncultivated land could be profitably cultivated. The wells would benefit from the bandh.

Revenue.

270 Bighas in the bandh at Rs. 2-4	Rs. 608
108 " outside " Re. 1	108
TOTAL	716

Contract cost Rs. 10,038
 Famine " " 18,396
 Profit on Contract cost 7.1 per cent.
 " " Famine " 3.9 " "

Contract cost	Rs. 13,830
Famine „	„ 26,821
Profit on Contract cost	5·8 per cent.
„ Famine „	3·0 „

Relief workers for three months—Numbers daily—

Diggers	916
Carriers	2,290
	<hr/>
TOTAL	3,206
	<hr/>

West bandh—Points A to 10 to 20—

	Rs.
987 Bighas in bandh at Rs. 2	574
200 „ outside „ Re 1	200
	<hr/>
TOTAL	774
	<hr/>

Contract cost	Rs. 9,899
Famine „	„ 18,959
Profit on Contract cost	7·8 per cent.
„ Famine „	4·0 „

Relief workers for three months—Numbers daily—

Diggers	640
Carriers	1,600
	<hr/>
TOTAL	2,240
	<hr/>

PROJECT No. 13.—*Bijawar Bandh and Canal*.—This scheme provides for a bandh, points 15 to 19, across the nullah just south of Saipura village, and for a bandh from 15 to 1. A waste weir with a masonry floor will be required from 19 to 22, also a waste weir at the south-east end by 1. A canal can be made from 16 towards 34 to command all the land between the two nullahs. The land between the canal and the bandh would benefit by percolation from the bandh.

An alternative scheme is to construct the bandh only from points 1 to 15, thence to carry it to the 100 contour.

The soil was all out of cultivation. North-east of the bandh it is good solid *purwa* soil capable of canal irrigation, and could produce two crops, sugar cane, rice, rabi crops, etc., and after the second year could return Rs. 3 per bigha. The land south of the bandh, that is inside it, is a mixture of black and *purwa* soil, and would absorb a large quantity of water.

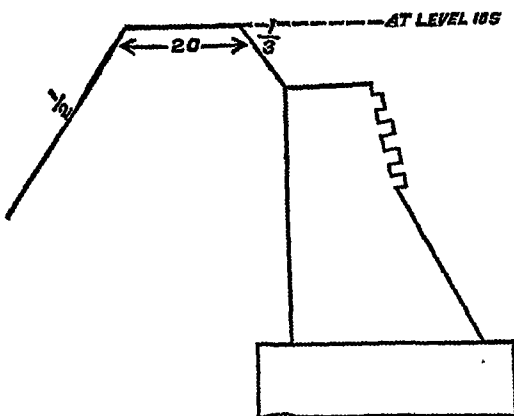
Point 15 is on a mound. If both the bandh 15 to 19 and the bandh 1 to 15 are constructed, the water will, when it reaches the level 98 in the Bihutpura nullah, run south of point 15 into the bandh, and ultimately the whole can rise to level 100 (see plan). The cross section on the plan shows the length and height of wall estimated for.

A large quantity of water comes down the Bihutpura nullah, and a waste weir, 50 feet wide, with masonry floor and drop walls, is provided for west of Saipura village. A second waste weir must also be constructed round point 1.

Two sluices at Rs. 400 each are allowed for. The details of the main bandh in Bihutpura nullah are—

	Contract cost.	Famine cost.
	Rs.	Rs.
70,000 cubic feet masonry at Rs. 12	9,600	9,600
433,000 cubic feet earthwork at Rs. 4	1,732	3,464
	11,332	13,064
Add—5 per cent.	516	653
TOTAL	11,848	13,717

This allows for earthwork behind the wall as in the sketch below—



The details of the waste weir by Saipura are—

	Contract cost.	Famine cost.
	Rs.	Rs.
181,000 cubic feet at Rs. 3 per 100	543	1,086
28,500 masonry at Rs. 10 per 100	2,850	3,420
	3,393	4,506
Add—5 per cent.	169	225
TOTAL	3,562	4,731

The floor of the weir is to be 6 inches thick, the end or drop walls 60 feet long, 2 feet wide, and 4 feet deep, the side walls 856 feet long, $1\frac{1}{2}$ feet wide, and 2 feet deep. Estimate for the bandh alone—

	Contract cost.	Famine cost.
	Rs.	Rs.
4,160,000 CUBIC FEET EARTHWORK—		
Earthwork at Rs. 3	12,480	24,960
Walls in small nullah	300	300
Two sluices	300	300
	13,580	26,060
Add—5 per cent.	679	1,250
TOTAL	14,259	27,310

Revenue from the bandh alone—

	Rs.
298 bighas in bandh, at Re. 2-8	745
238 " outside " " Re. 1	238
TOTAL	983

Profit on Contract cost	0.97 per cent.
" Famine "	4.4 "

Relief workers for three months—Numbers daily—

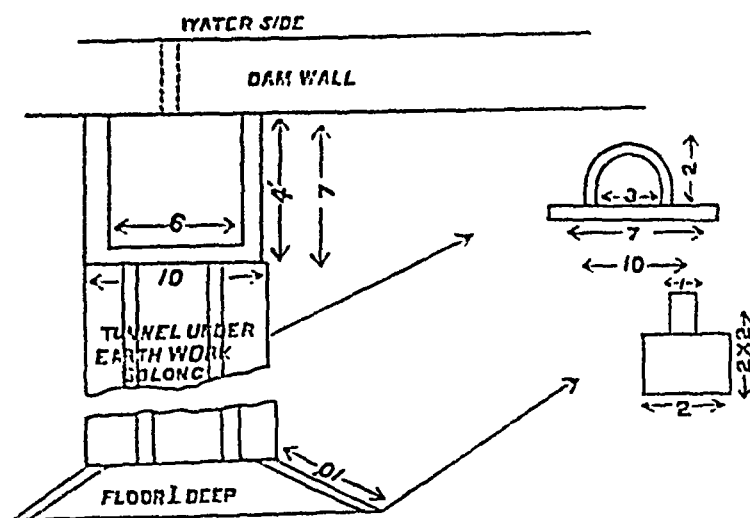
Diggers	930
Carriers	2,325
TOTAL	3,255

Taking the complete project, *i.e.*, the bandh in Bihutpura nullah and the bandh—

Revenue.

	Rs.
Irrigated by Canal, 450 bighas, at Re. 3-4	1,462
Land below bandh and above Canal, 190 bighas, at Re. 1	350
	1,812
Add—fer cultivation round the edge of the bandh	158
TOTAL	2,000

In addition to the two sluices in the bandh, the bandh estimate allows for a sluice to feed the canal at 16. A sketch of the sluice is given below. Its floor is to be at level 86.34—



	Rs.
Contract cost, complete project	28,869
Famine " " "	44,758
Profit on contract cost	6.97 per cent.
" Famine " " "	4.0 "

Relief workers for three months—Numbers daily—

Diggers	1,200
Carriers	3,000
TOTAL	4,200

PROJECT No. 13A.—*Canal for Gora Tal.*—Time only admitted of flying levels being taken for a canal to ascertain its feasibility. They are plotted and the route and levels shown on the plans.

The surplus water of the lake escapes down a nullah as shown. By building a masonry wall about 100 feet long in this nullah, the level of the water in the lake could be raised. There are difficulties in the way of carrying this out owing to the fact that Charkhari State owns half the land round the border and Bijawar State the other half. Thus if Bijawar raises the level of the water Charkhari land is flooded. On the other hand, by drawing water off in a canal, as the water receded a larger belt all round could be sown.

The levels were taken at the end of March, when consequently the water was low. The canal laid out started at 5 feet below that water level.

The canal would have to cross the head of the valley of Gora village by a bridge with masonry piers or could be carried across by pipes on piers. Similarly some pipes and piers would be required to cross some nullahs, between points 27 and 29. After point 37 the land commanded belongs to Charkhari State, and canal would, if extended, run towards Tindnee village. There was not time to take the numerous sections necessary for an estimate. The canal will irrigate at least 500 bighas of good *purwa* soil which was all out of cultivation.

Abstract Bijawar State.

WORK.	Area.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
	Bighas.	Rs.	Rs.	Rs.			No.
Nengua . .	378	716	10,038	18,396	7.1	3.9	2,275
Lakanwar . .	1,308	1,716	23,350	44,200	7.3	3.9	5,040
Saipura . .	640	2,000	28,669	44,758	7.0	4.0	4,200
	2,326	4,432	62,057	1,07,354			11,515

Average profit on Contract cost	7.1 per cent.
" " Famine "	3.9 "

ORCHHA STATE.

I marched from Nowgong to Tehri, from Tehri to Man, from Barwa Sagor to Nadanwara and thence to Nowgong, and found it difficult to find

suitable sites for bandhs. The north-west portion of the State, *i.e.*, north of Nandanwara, is quite unsuited for their profitable construction. The ground in this part is hilly and the soil poor. Small bandhs might be constructed, but not large enough to make it worth while making surveys.

Four works have been provided for this State, at Jamrar, Sidhganwa, Nandanwara, and Palehra.

PROJECT 14.—Jamrar Bandh.—Jamrar is four miles south of Tehri or Tikamgarh. The project is to dam the nullah south of Jamrar village as shown by a large bandh.

The estimate allows for a waste weir in the nullah of which the details are shown on the plan. Also for small walls in the smaller nullahs, a waste weir causeway over the road by points 27, 28, and for two sluices at Rs. 400 each.

The soil to be enclosed in the bandh is good *purwa* soil and was all out of cultivation. The details of the estimate are given as follows:—

	Contract cost.	Famine cost.
	Rs.	Rs.
W. Weir in large nullah pots 15 to 16		
	Rs.	
Masonry 155,340 cubic feet at Rs. 10	15,534	
Dry stone filling 195,750 cubic feet at Rs. 4 per 100	7,930	
Weir net-work	200	
Excavation 129,000 cubic feet at Rs. 4 per 1,000	516	
Drop wall masonry 6,000 cubic feet at Rs. 10 per 100	600	
	24,780	
<i>Add</i> —5 per cent.	1,239	
	26,019	25,600
Masonry in small nullah	1,726	1,726
W. Weir causeway over road	403	403
Earthwork in bandh 8,767,000 cubic feet at Rs. 3 for Contract cost and Rs. 6 for Famine cost with 5 per cent. added	27,606	55,232
TOTAL	54,754	82,961

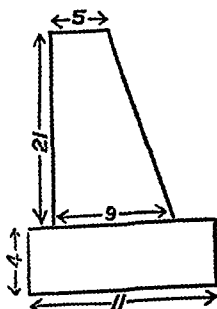
<i>Revenue.</i>	Rs.
2,812 bighas in the bandh, at Rs. 2	5,624
580 „ outside „ „ „ 1-8	795
TOTAL	6,419

Profit on Contract cost	14.0 per cent.
„ Famine „	7.6 „

Relief workers for three months—Numbers daily—

Diggers	2,000
Carriers	5,000
TOTAL	7,000

PROJECT 15.—*Sidhgawa Tank*.—This work is to be six miles north of Tehri, on the road to Orchha. It provides for the construction of a tank immediately north-east of the *Bagicha* with a waste weir discharging to the west north of point 2. The tank proposed will receive the overflow from Karee tank and is designed to feed two canals. A sluice at 3 would deliver water by a channel to 1, whence canals can be run 1 to 12, and 1 to 15 (canal C). This will also command all the *Bagicha* which has fruit and vegetables, and which at present is watered by two pairs of bullocks and *tursahs* from a deep Baoli (large well) in the *Bagicha*. A second sluice at 5 would feed canal D, points 16 to 23. A bridge to carry the water over the nullah at 17 would be required and a culvert to carry it under the road between points 20 and 21.



The levels are shown on the plan. The estimate allows for two sluices at Rs. 500 each and for masonry wall 60 feet long, section as per margin, in the nullah between points 4 and 5.

11,460 cubic feet.
1,065 „ wing walls.
12,525 cubic feet
at Rs. 10 = Rs. 1,252

Revenue.

Land irrigated by Canal C	.	.	.	.	.	.	142 bighas.
„ „ „ D	.	.	.	.	.	.	217 „
							359
							Say, 360 bighas

							Rs.
360 bighas at Rs. 2-8	.	.	.	.	.	.	=800
Add—for cultivation along the edge of the tank 100 bighas at							
Rs. 2-8	.	.	.	.	.	.	=250
							TOTAL . 1,050

Contract cost	.	.	.	.	.	.	Rs. 10,463
Famine „	.	.	.	.	.	.	„ 18,946
Profit on Contract cost	.	.	.	.	.	.	10.0 per cent.
„ Famine „	.	.	.	.	.	.	5.4 „

Relief workers for three months—Numbers daily—

Diggers	.	.	.	.	.	.	570
Carriers	.	.	.	.	.	.	1,425
							TOTAL . 1,995

No estimate has been made of profit to be derived from irrigating the *Bagicha*.

PROJECT No. 16.—*Nadanwara Canal*.—This provides for a canal to be fed from Nadanwara tank. It is more suitable as a protective than as a relief work. A double advantage is derived from taking water off large tank since in addition to the land commanded by the canal, a larger belt of cultivation round the edge is obtained as the water sinks.

To carry the canal from 13 to 14 a wide and deep nullah would have to be crossed, the expense of which would, I think, not be justified by the small amount of extra land so commanded. Points 14 to 19 were levelled, and so are put on the plan, but this extension is not considered advisable.

The canal from 3 to 13 commands 184 bighas, all good soil, and which was mostly out of cultivation. It is proposed to make walls as shown at A and B (see enlarged plan) to form a small tank in the rocks. Wall A to be 10 feet long. Wall B to be 32 feet long. Wall B is to have a sluice discharging into a channel, which is to be cut in the rocks to run to C. From C the canal must run in a deep cutting until it runs out at ground level at 3, at level 88.57. The level of the water at the time of the survey—October 23rd, 1898—after a summer of heavy rain was 98.93. The upper surface of the existing weir was taken as bench mark level 100.0.

Assuming the canal to be 1 foot deep at 3, its bed there will be at 87.5. The ground at C is at about 89.4. The tank above C is at 105.5. The canal will start in 16 feet depth of cutting, which at 2 will be only 4 feet deep. From 5 onwards the canal should run on ground level its sides being banked up.

Details of cost.

Details of cost.	Contract cost.	Famine cost.
	Rs.	Rs.
1,656 cubic feet masonry at Rs. 15 per 100	248	248
Earthwork at Rs. 4 per thousand, 55,250 cubic feet	221	442
Blasting rocks at Rs. 6 per 100	162	162
	811	1,211
Add—10 per cent.	81	121
	892	1,332

Revenue.

	Rs.
184 bighas, at Re. 1 per bigha	184
Profit on Contract cost	20 6 per cent.
" Famine "	13.8 "
Relief workers for three months—Numbers, daily—	
Diggers	26
Cartiers	65
Add—for masonry	9
TOTAL	100

PROJECT No. 17.—*Palehra Bandh*.—Palehra is about 12 miles south-west of Nowgong. This project provides for the construction of a large bandh across the nullah which flows northwards, and which is about one mile west of Palehra. This would form a tank from which a canal could be run as shown to command about 700 bighas. Of the land which would be drowned in the tank the north part consists of bad soil, all out of cultivation, and a good deal of rock. That to the south which would be exposed as the water sinks consists of good soil, and it is estimated that 350 bighas of this part could be sown. The estimate allows for masonry walling in the nullah as shown on the plan 15,482 cubic feet masonry at Rs. 12 per 100 cubic feet=Rs. 1,858, also for a sluice at Rs. 800 to feed the canal at point 4.

The land to be commanded by the canal was all cultivated. Therefore, only 8 annas per bigha water rate is shown for this as the increased profits, but the protective value of the tank would be very great.

Revenue.

	Rs.
700 bighas, at annas 8	350
350 " at Rs. 2	700
TOTAL	1,050

Contract cost	.	.	.	.	.	.	.	Rs. 21,023
Famine	„	.	.	.	.	.	.	„ 38,755
Profit on Contract cost	.	.	.	.	.	.	.	4.09 per cent.
„ Famine	„	.	.	.	.	.	.	3.7 „
Relief workers for three months—Numbers daily—								
Diggers	.	.	.	.	.	.	.	965
Carriers	.	.	.	.	.	.	.	2,412
TOTAL								3,377

Summary, Orchha State.

PLACE.	Area.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, 3 months.
					Contract cost.	Famine cost.	
	Bighas.	Rs.	Rs.	Rs.			No.
Jumnar	3,342	6,419	45,554	83,761	14.0	7.6	7,000
Sidhganwa	460	1,050	10,463	18,496	10.0	5.4	1,995
Nadanwara canal	184	184	802	1,333	20.6	13.8	100
Palehra	1,050	1,050	21,023	38,755	5.0	2.7	3,377
	5,036	8,703	77,932	1,42,345	...	...	12,472

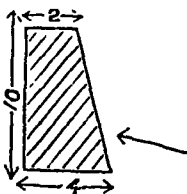
Average profit on Contract cost 12.4 per cent.
 „ „ „ Famine „ 7.4 „

JIGNI STATE.

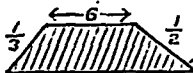
Jigni is a small State which had in 1898 only 7 villages. Two works have been surveyed, the Italia Bangra Bandh, 2 miles south-west of Jigni, and the Jigni Bandh whose south-east end begins by the north-west end of the former work.

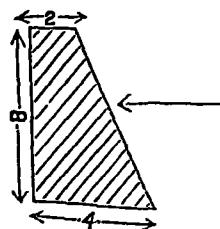
PROJECT 18.—Italia Bangra Bandh.—The land to be enclosed in this bandh was about half under cultivation, paying 7 annas per bigha. It is mostly *purma* soil, about $\frac{1}{3}$ rd of it being black cotton soil. Black soil in a bandh will pay up to Rs. 4 per bigha. Nine hundred and eighty-four bighas will be enclosed. We may assume the bandh will increase the rate up to Rs. 2 per bigha. Two waste weirs should be cut, one round each end. That round the north-west end, point 2, would discharge into the Jigni bandh, should this latter work be also constructed.

The estimate allows for—



210 feet length of wall, section as per margin, between 9 and 10, 65 feet length of wall, section as per margin, between 12 and 13, a masonry end to the bandh

at points 16 $\frac{1}{3}$  wall 2 feet



thick, a drop wall in each waste weir 60 feet long, 2 feet broad, 4 feet deep.

Total 9,026 cubic feet masonry at Rs. 10 per hundred cubic feet = Rs. 902. The estimate allows also for two sluices at Rs. 400 each.

Revenue.

984 bighas in the bandh at Rs. 2	Rs. 1,968
Deduct—now received	44
TOTAL	1,924
Contract cost	Rs. 12,963
Famine „	24,140
Profit on Contract cost	15.5 per cent.
„ „ Famine „	7.5 „
Relief workers for three months—Numbers daily—	
Diggers	800
Carriers	2,000
TOTAL	2,800

PROJECT No. 19.—*Jigni Bandh*.—To assist in laying out this work the plan shown points 1 to 5 of the Italia Bangra bandh, the overflow of which it would receive. The estimate allows for three sluices at Rs. 350 each. The waste weir must be cut round the north-east end of the bandh by point 37.

Revenue.

1,005 bighas in the bandh, at Rs. 1-8	Rs. =1,509
300 „ outside „ „ „ Re. 1-0	=300
TOTAL	1,809
Deduct—125 bighas which were under cultivation at 8 annas	125
	1,684

Contract cost	Rs. 14,210
Famine „	27,317
Profit on Contract cost	11.8 per cent.
„ „ Famine „	6.1 „
Relief workers for three months—Numbers daily—	
Diggers	925
Carriers	2,312
TOTAL	3,237

Summary of Jigni State.

PLACE.	Area.	Revenue.	Contract cost.	Famine cost.	Profit on		Relief workers, three months.
					Contract cost.	Famine cost.	
	Bighas.	Rs.	Rs.	Rs.			No.
Italia Bangra	984	1,924	12,963	24,140	15.5	7.9	2,800
Jigni	1,306	1,684	14,210	27,317	11.8	6.1	3,237
	2,290	3,608	27,173	51,457	...	...	6,037

Average profit on Contract cost 13.6 per cent.
 „ „ „ Famine „ 7.0 „

SARILA STATE.

Sarila is a small State. Two bandhs have been designed which are shown on one plan. Either could be constructed independently or both can be made, the upper one discharging by its sluices into the lower one.

PROJECT No. 20.—This bandh extends from 1 to 15. The estimate allows for four sluices at Rs. 300 each. The waste weir should be constructed round point 15.

Revenue (increase).

	Rs.
1,592 bighas in bandh to pay	2,607
Contract cost	Rs. 12,962
Famine "	" 24,665
Profit on Contract cost	" 20.1 per cent.
" " Famine "	" 10.5 "
Relief workers for three months—Numbers daily—	
Diggers	816
Carriers	2,040
TOTAL	2,856

PROJECT No. 21.—*Lower Sarila Bandh*.—This bandh extends from point 16 to 26. The land to be enclosed was practically all out of cultivation.

Revenue.

	Rs.
1,232 bighas in bandh, at Rs. 2	= 2,464
Contract cost	Rs. 3,695
Famine "	" 6,865
Profit on Contract cost	66.6 per cent.
" " Famine "	35.8 "
Relief workers for three months—Numbers daily—	
Diggers	216
Carriers	540
TOTAL	756

The estimate allows for 4 sluices at Rs. 150 each.

The waste weir should be constructed round point 26.

Summary of Sarila State.

Work.	Area.	Revenue.	Contract cost.	Famine cost.	Profit on		Relief workers, three months.
					Contract cost.	Famine cost.	
	Bighas.	Rs.	Rs.	Rs.			No.
Upper bandh	1,592	2,607	12,962	24,665	20.1	10.5	2,856
" "	1,232	2,464	3,955	6,865	66.6	35.8	756
	2,824	5,071	16,957	31,520	...	...	3,612

Average profit on Contract cost 43.3 per cent.

" " " Famine " 23.1 "

BERI STATE.

This is a small State with a population of about 5,000.

PROJECT No. 22.—*Beri Bandh*.—The site surveyed for a bandh is the only site in the State suitable for such a work. The soil to be enclosed is half *mar* and half *ranker*.

Mar soil pays Rs. 2 per bigha.

Ranker soil pays Re. 1 per bigha at present.

In a bandh the rate would vary from Rs. 2 to Rs. 3, so we may assume an average rate of Rs. 2.5, or an increase of revenue of Re. 1 per bigha.

A small bandh is required at A to prevent overflow down into the nullah to the south, length 200 feet, height at lowest point of the ground 6 feet, and 3 feet at the end. A portion of bandh is also required at B, 23, 24, 25, length 815 feet, height at 23 and 25, 3 feet and at 24 4½ feet. Most of the land below the line of the bandh was out of cultivation. At 22 the bandh will end in an existing mound. A waste weir should be cut round 23 to drain into the nullah to the south.

Revenue.

1,189 bighas in bandh at Re. 1	Rs.	
600 „ outside bandh at Re. 1	=1,189	
	= 600	
TOTAL	1,789	
Contract cost	Rs. 11,077	
Famine „	„ 21,055	
Profit on Contract cost	16.1 per cent.	
„ „ Famine „	8.4 „	
Relief workers for three months—Numbers daily—		
Diggers	708	
Carriers	1,770	
TOTAL	2,478	

The estimate allows for three sluices at Rs. 350 each.

BAONI STATE.

The population of this State is about 19,000. It is not so well adapted for bandh irrigation as for canal irrigation. I referred to this in my report on irrigation in Bundelkhand in 1897. Five projects have been prepared, one for a work between Kadaura and Bargee, for a work near Punohra, for two works near Sijari and Nazirpur, and for one near Ekona.

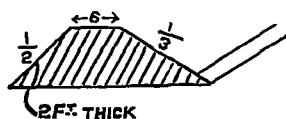
PROJECT NO. 23.—*Punohra Bandh*.—The land to be enclosed in this bandh now gives from Rs. 2 to Rs. 2-8 per bigha. With the bandh it should give from Rs. 3 to Rs. 4.

It is good *Kabir* land, and only about one-third of the area to be enclosed was cultivated.

Assume the rate be Rs. 3.

452 bighas in bandh, at Rs. 3	Rs.	
Deduct—150 bighas at Rs. 2-4 Say	=1,256	
	388	
Increase of revenue	918	
Contract cost	Rs. 3,057	
Famine „	„ 5,756	
Profit on Contract cost	30.8 per cent.	
„ „ Famine „	15.9 „	
Relief workers for three months—Numbers daily—		
Diggers	200	
Carriers	500	
TOTAL	700	

The estimate allows for a masonry end to the bandh at 1 at Rs. 40 and for a sluice at Rs. 300.



PROJECT NO. 24.—*Ekona Jukseea Bandh*.—This work is to be about 1 mile north-east of Jukseea, near the boundary of Hamirpur land. The land to be enclosed consists of *mar* soil and was all out of cultivation except a small patch. It is described as capable of producing Rs. 4 per bigha. There is practically no land outside the bandh to benefit, except a little below bandh B. The work is divided into two parts—

Bandh A 1 to 23.

„ B 22 to 31.

The bandh had to be laid out conformably to the boundary, otherwise it might have been extended at the north end.

The estimate allows for two sluices at Rs. 300 each.

Revenue.

Bandh A	.	176	bighas.						
" B	.	75	"						
				251	bighas at Rs. 2-8	.	.	.	= Rs. 027
Contract cost	.	.	.	.	.	.	.	.	Rs. 6,880
Famine	"	.	.	.	.	.	.	.	" 13,120
Profit on Contract cost	.	.	.	.	.	.	.	.	9.1 per cent.
" " Famine	"	.	.	.	.	.	.	.	4.7 "
Relief workers for three months—Numbers daily—									
Diggers	.	.	.	.	.	.	.	.	441
Carriers	.	.	.	.	.	.	.	.	1,105
				TOTAL					1,546

PROJECT No. 25.—*Sijari Tank*.—This project is to dam the nullah by a bandh 20 feet wide at the top with side slopes of $\frac{1}{2}$ on the water side, and of $\frac{1}{2}$ on the outside. The top of the bandh is to be made 6 feet above high-water level. A sluice is to be built at 4 for which Rs. 500 is allotted in the estimate. The bottom of the sluice will be 8 feet below high-water level, and it will feed a canal as shown which will command 53 bighas. It is assumed that, as the water sinks, $\frac{1}{3}$ of the wetted area can be cultivated. The area in the tank will be 100 bighas.

Revenue.

53 bighas irrigated by canal.									Rs.
80 " in tank.									
133 " at Rs. 2-8	.	.	.	.	.	.	.	.	= 332
Contract cost	.	.	.	.	.	.	.	.	Rs. 2,787
Famine	"	.	.	.	.	.	.	.	" 5,048
Profit on Contract cost	.	.	.	.	.	.	.	.	11.5 per cent.
" " Famine	"	.	.	.	.	.	.	.	6.3 "
Relief workers for three months—Numbers daily—									
Diggers	.	.	.	.	.	.	.	.	160
Carriers	.	.	.	.	.	.	.	.	400
				TOTAL					560

PROJECT No. 26.—This is a project similar to No. 25, *viz.*, to dam the nullah and construct a sluice and canal. The bandh is to be 16 feet wide at the top, side slopes $\frac{1}{2}$ on the water side and $\frac{1}{2}$ on the outside. The bandh should be prolonged 200 feet beyond 1. Rupees 50 is allotted for an end wall at the east end and Rs. 576 for a waste weir. Also Rs. 400 for a sluice. The land to be enclosed in the proposed tank consists of *purwa* soil. About half of it was under cultivation giving about Rs. 1-2 per bigha. If the tank is made, it could return Rs. 2 per bigha. The canal commands 60 bighas.

Revenue.

60 bighas canal irrigation, at Rs. 2-8	.	.	.					Rs.	= 150
100 " in tank " Re. 1	.	.	.						= 100
									250
Contract cost	.	.	.	.	.	.	.	Rs.	3,349
Famine	"	.	.	.	.	.	.	"	5,020
Profit on Contract cost	.	.	.	.	.	.	.		7.4 per cent.
" " Famine	"	.	.	.	.	.	.		4.4 "

Relief workers for three months—Numbers daily—

Diggers	.	.	.	.	.	.	.	.	.	160
Carriers	.	.	.	.	.	.	.	.	.	400
TOTAL										560

PROJECT No. 27.—*Kadaur-Bargee Road*.—This is a scheme for raising the Kadaura-Bargee Road and strengthening an existing small bandh so as to hold the water over an area of 1,478 bighas.

The drainage of the land flows south-east and is intercepted by the Kadaura-Bargee Road.

The water accumulated at A and breached the road. A bandh was made from B to C joining at B the bank of the canal distributary known as the Bargee minor. This scheme provides for strengthening the west bank of this distributary canal from 1 to B, for strengthening the existing small bandh from 1 to 20 and for raising the road and providing a culvert to let the water pass to its south side. It will be necessary to make a short length of bandh from point 20 to the road near this to prevent the water running off to the south-west towards Kadaura. The plan shows the wetted area. The water will be $1\frac{1}{2}$ feet deep at D. The road, when raised, will be about $2\frac{1}{2}$ feet above natural ground.

The estimate allots Rs. 200 for a sluice, Rs. 258 for the culvert, 7,600 feet length of road will be raised to be 20 feet wide which will give 910,000 cubic feet earthwork.

Revenue.

		Rs.
1,478 bighas at 8 annas	.	= 739
Contract cost	Rs.	3,857
Famine	"	7,235
Profit on Contract cost	.	19.1 per cent.
" " Famine	"	10.2 "

Relief workers for three months—Numbers daily—

Diggers	.	.	.	.	.	.	.	.	.	238
Carriers	.	.	.	.	.	.	.	.	.	595
TOTAL										833

Summary of Baoni State.

WORK.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Pundhra	452	918	3,057	5,756	30.0	15.9	700
Ekona Juksua	251	627	6,880	13,129	9.1	4.7	1,546
Sijhra	133	322	2,787	5,048	11.5	6.3	560
Naziarpur	160	250	3,349	5,620	7.4	4.4	560
Bargee-Kadaura	1,478	739	3,857	7,235	19.1	10.2	833
	2,474	2,856	19,980	36,788	...	...	4,199

Average profit on Contract cost 15.4 per cent.
 " " Famine " 8.3 "

SAMTHAR STATE.

The land in this State is not well adapted for the construction of bandhs. Three works have been surveyed, one near Samthar and two about six miles to the east of this town.

The eight miles of road from Moth to the town require keeping in repair. This road is metalled, but was in very bad condition. Its repair would form a good relief work. All the supplies enter the State along this road.

PROJECT NO. 28.—Samthar Bandh.—This work will be immediately south of the town, and its west end will rest on the canal bank. The land to be enclosed was under cultivation, but it is considered that a bandh would, for rabi crops, increase the revenue by Re. 1 per bigha. To lay out the work, measure 1,542 feet along the canal southwards from the bridge where it is crossed by the Moth-Samthar Road. The other end of the bandh can be fixed from the well which is about 1,000 feet south of the Bahadurganj house shown on the plan.

The estimate allows for two sluices at Rs. 300 each, one to be on each side of the nullah.

Revenue.

	Rs.
685 bighas in the bandh, at Re. 1	= 685
Contract cost	Rs. 3,024
Famine	5,418
Profit on contract cost	22.6 per cent.
„ „ Famine „	12.6 „

Relief workers for three months—Numbers daily—

Diggers	170
Carriers	425
TOTAL	695

PROJECT NO. 29.—Chirgaon Bandh.—This scheme is to raise the road from Samthar to Chirgaon to form a dam and road-way 20 feet wide at the top, side slopes on the water side to be $\frac{1}{3}$, on the outside $\frac{1}{2}$. The bridge at Chirgaon will be blocked by planks and the bandh completed by carrying it round as shown to point 20. The levels shown of points 1 to 10 are the levels of points on the road. The natural ground is lower than the road, and allowance has been made for this in estimating the amount of earthwork required. The heights given as the height of the bandh at the various points are the heights that it must be made up to above the road points. The deepest water will be 3 feet in the bandh.

It will enclose 1,448 bighas. An increase of revenue of Re. 1 per bigha is estimated.

Revenue.

	Rs.
1,448 bighas at Re. 1	= 1,448
Contract cost	Rs. 7,109
Famine cost	18,626
Profit on Contract cost	20.8 per cent.
„ „ Famine „	10.6 „

Relief workers for three months—Numbers daily—

Diggers	454
Carriers	1,135
	1,589
Say	1,600

PROJECT NO. 30.—Chirgaon-Mailooa.—This bandh is to join on to point 14 of the Chirgaon bandh, project 29. This point is marked 1 on the plan, project 30. It will enclose 1,270 bighas, and is estimated to produce an increase of

revenue of Rs. 1 per bigha. The estimate allows for two sluices at Rs. 300 each.

Revenue	Rs.	1,270
Contract cost	"	7,714
Famine cost	"	14,799
Profit on Contract cost		16.4 per cent.
" " Famine "		8.5 "
Relief workers for three months—Numbers daily—		
Diggers		500
Carriers		1,250
TOTAL		1,750

Summary of Samthar State.

Work.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, 3 months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Samthar	685	685	3,024	5,418	22.6	12.6	695
Bhangra-Chirgaon	1,448	1,448	7,034	13,438	20.3	10.6	1,539
Chirgaon-Mailooa	1,270	1,270	7,714	14,799	16.4	8.5	1,750
	3,403	3,403	17,772	33,655	...	...	4,034

Average profit on Contract cost 19.8 per cent.
 " " " Famine " 10.6 "

DATIA STATE.

The south-west portion of this State, *i.e.*, that surrounding Datia town, is high ground, with, generally speaking, poor soil, of which a large portion is out of cultivation. The north and west portions consist of better soil and of more cultivation.

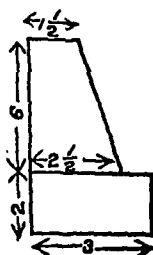
Eight projects have been prepared for works at Kherie, Lalona, and Sersa going eastwards from Datia, at Jharia, north of Datia, also at Kathounda and Dahlouan near Indergarh.

PROJECT NO. 31.—Kherie Tanks.—This provides for the formation of a tank to be enclosed by the *Bagicha* walls A, B, B, C, thence by a bandh to 1 and on to 12. In order to carry the road across it must be raised. The high-water level of this tank is to be the level of the top of the parapet of the existing bridge. In addition to the earthwork required for the bandh C to 12 the estimate allows for a bank of earth inside and outside the *Bagicha* walls, for raising the parapet of the bridge and giving it wing walls, and for dry stone pitching along the south side of the raised road. Also for a wall in the nullah, where the bundh crosses it and for two sluices.

The items of the estimate are as follows :—

	Contract cost.	Famine cost.
	Rs.	Rs.
2,684,000 cubic feet earthwork at Rs. 3 and Rs. 6	at Rs. 3=8,052	at Rs. 6=16,104
Wall in nullah	102	102
Raising and strengthening bridge	460	460
Dry stone pitching 7,200 cubic feet at 5 per cent.	360	360
Add—percentage	9,774	17,836
TOTAL	10,401	18,556

The wall in the nullah should be of section as per margin and 64 feet long. Masonry at Rs. 10 per 100 cubic feet. The land to be flooded in this tank consists of inferior soil. It was all out of cultivation and covered with thick jungle south of the *Bagicha*. Points 7 to 27 form a lower tank to be filled from the sluices of the upper tank. A canal from 8 to L was surveyed to irrigate land south of Makoni village. It would not be profitable to construct the lower tank alone.



The upper tank might be constructed alone, to be emptied entirely and sown. The soil would improve with the *débris* and silt brought down from the jungle.

Revenue.

	Rs.
271 bighas in upper tank, at Rs. 2	=542
200 „ outside „ Rs. 1-8	=300
TOTAL	842

Contract cost	Rs. 10,401
Famine „	18,556
Profit on Contract cost	8.0 per cent.
„ „ Famine „	4.4 „

Relief workers for three months—Numbers daily—

Diggers	820
Carriers	1,550
	2,170

The storage of this tank will be approximately 18,935,000 cubic feet.

If both tanks are made, the upper tank A to 12 would empty into the lower, leaving the area in the former to be sown. The lower tank can irrigate by canal 316 bighas of land north-west of Makoni village.

While the upper tank is emptying it could feed canal 8 to L and irrigate 100 bighas.

Revenue.

	Rs.
271 bighas in upper tank at Rs. 2	=552
Canal irrigation north-east of Makoni, 316 bighas at Rs. 2-8	=790
Land south-east of Makoni, canal irrigation, 100 bighas at Rs. 2-8	=250
100 bighas along the edge of the lower tank at Rs. 2	=200

Say 1,782, 1,800

	Contract cost.	Famine cost.
	Rs.	Rs.
Upper tank	10,401	18,856
Lower „	9,616	18,392
	20,017	37,248

Profit on contract cost 9.4 per cent.
 „ on famine „ 5.0 „

Relief workers for three months—Numbers daily—

Diggers	1,272
Carriers	3,180
	4,452

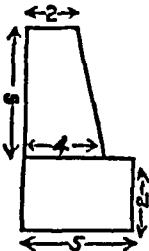
PROJECTS NOS. 32 AND 33.—*Lalona Bandh*.—Two bandhs have been surveyed north of Lalona village, points 1 to 10 from the west bandh and 11 to 20 from the east bandh. Point A is a natural waste weir by which the overflow from the west bandh can fall into the east bandh, or form a natural escape, should only the west bandh be constructed.

The level of A is 108.

The high-water level of the east bandh is made 2 feet lower than that of the west bandh, and the top of the former will be 6 feet above its high-water level, that is, 4 feet above the high-water level of the west bandh. This will allow for sudden rises, and if it is desired to keep the high-water level the same in both bandhs, each bandh has its top 4 feet above 108, and all that is necessary will be to raise the floor of the waste weir of the west bandh.

The land in the bandh 1 to 10 was all out of cultivation with the exception of a few patches. It is good *puriwa* soil with some jungle at the north-west corner.

That in bandh 11 to 12 is very good soil, and was mostly out of cultivation. The ground below it is well adapted for irrigation.



The estimate for the east bandh 1 to 10 allows for a wall, 50 feet long section as per margin in the nullah, cost Rs. 140 at Rs. 10 per 100 cubic feet. Also for two sluices at Rs. 400 each.

Revenue.						Rs.
284 bighas in bandh, at Rs. 2	.	.	.	.	.	=497
150 „ outside, at Re. 1	.	.	.	.	.	=150
TOTAL						647
						Rs.
Contract cost	.	.	.	.	.	9,892
Famine	.	.	.	.	.	18,797
Profit on Contract cost	.	.	.	.	.	6.5 per cent.
„ Famine „	.	.	.	.	.	3.4 „

Relief workers for three months—Numbers daily—

Diggers	.	.	.	.	.	.	.	.	.	628
Carriers	.	.	.	.	.	.	.	.	.	1,570
TOTAL										2,198

The estimate for the west bandh allows for a masonry waste weir between points 19 and 20, the details of which are shown on the plan. Cost Rs. 250; 2,454 cubic feet of masonry, at Rs. 10 per 100 cubic feet.

It also allows for two sluices at Rs. 450 each.

Revenue.						Rs.
312 bighas in bandh, at Rs. 2	.	.	.	.	.	624
150 „ outside, at Re. 1	.	.	.	.	.	150
TOTAL						774

	Rs.
Contract cost	8,802
Famine "	16,397
Profit on Contract cost	8.7 per cent.
" Famine "	4.7 "

Relief workers for three months—Numbers daily—

Diggers	536
Carriers	1,340
TOTAL	1,876

The site for the west bandh can be identified by its position relatively to the nullah crossing north of Lalona village by the rock **B** and by the hill **A D**.

PROJECTS Nos. 34 AND 35.—This is a scheme to form two bandhs south and south-west of Sersa village. The line surveyed could make one bandh, points 1 to 34, or two separate bandhs—

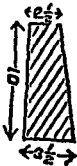
Bandh **A** 1 to 17 to **X**.

" **B X** to 17 to 34.

Of the land to be enclosed patches were under cultivation. The soil would be much improved by these bandhs, as there is jungle to the south from which *débris* would be brought down.

The bandhs would also have a protective value, the storage being sufficient to irrigate about 376 bighas below bandh **A** and 300 bighas below bandh **B**.

The profit to be derived from bandh **A** is probably under-estimated. Bandh **B** can discharge into the existing tank at Sersa, which again commands a large tract east of Sersa village. The existing tank by this village wants repair at its north-east part, where it leaks. If both bandhs are constructed, it would still be advisable to construct a separating portion from 17 to **X** with a sluice in it and a waste weir round its end as shown on the plan. The estimate allows for 60 feet of wall, section as per margin, in the nullah between 7 and 8 at Rs. 10 per 100 cubic feet=Rs. 180.



Also for two sluices in bandh **A** at Rs. 400 each and for two sluices in bandh **B** at Rs. 500 each.

Bandh **A** 1 to 17.

Revenue.

	Rs.
432 bighas in the bandh, at Rs. 1-8	= 648
200 " outside " annas 12	= 150
TOTAL	798

	Rs.
Contract cost	9,251
Famine "	17,472
Profit on Contract cost	8.6 per cent.
" Famine "	4.5 "

Relief workers for three months—Numbers daily—

Diggers	580
Carriers	1,450
TOTAL	2,030

Bandh B 17 to 34.

	Rs.
283 bighas in the bandh at Rs. 2	=566
250 „ outside „ „ Re. 1	=500
TOTAL	<u>1,066</u>
Contract cost	Rs. 11,628
Famine „	„ 22,205
Profit on Contract cost	9.1 per cent.
„ Famine „	4.8 „
Relief workers for three months—Numbers daily—	
Diggers	746
Carriers	1,865
TOTAL	<u>2,611</u>

PROJECT NO. 36.—*Jharia Bera Tank*.—Jharia village is about six miles north of Datia town. The water in the proposed tank will cover 638 bighas, of which about half is jungle with long grass. The soil is *purwa* with *ranker* in parts. It is estimated to hold at least 55,600,000 cubic feet of water above the level, 100, of the outlet of the proposed canal. This will be sufficient for 556 bighas. Two canals, A to D, and E to G can command this amount of land. In addition, at least 200 bighas can be cultivated below the bandh and along the edge of the water. The bandh will require strong masonry walls in the nullah, of which the details are shown on the plan.

The estimate allows for—

	Rs.
Masonry wall between 5 and 6	3,168
„ „ „ 10 and 11	2,484
Masonry end at 20	61
3 sluices at Rs. 400	1,200

A waste weir should be provided at 20 where the overflow will flow over solid rock.

Revenue.

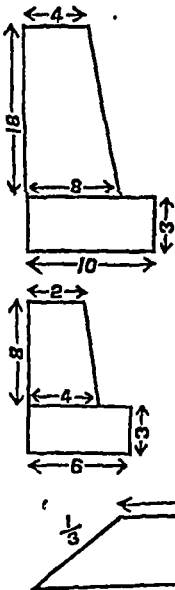
	Rs.
556 bighas canal irrigation, Rs. 2-8	1,480
200 „ in and below bandh at Rs. 2.	400
TOTAL	<u>1,880</u>

Contract cost	Rs. 20,624
Famine „	„ 33,990
Profit on Contract cost	9.1 per cent.
„ „ Famine „	1.1 „
Relief workers for three months—Numbers daily—	
Diggers	1,000
Carriers	2,500
TOTAL	<u>3,500</u>

The estimate of workers is probably low, as there is a good deal of masonry work.

PROJECT No. 37.—Soora Kathounda Bandh.—This is a project for a large bandh south-east of Indergarh. It is to be made in two parts of which the southern part 1 to 8 to A can, if desirable, be made first. No waste weir will be necessary as the water will find a natural outlet to the west, as shown on the plan, when it reaches the high-water level. If the whole bandh is made, a sluice should be provided in the portion 8 to A to control the discharge from the upper into the lower bandh.

About $\frac{1}{3}$ of the land in the upper bandh, 1 to A, was cultivated and patches of that in the lower band. A waste weir for the latter should be provided round 27.



The estimate for the upper bandh allows for 50 feet length of wall, section as per margin, also for 150 length of wall 8 feet high, section as per margin, between 4 and 7. The portion of the bandh 8 to A is to be 15 feet wide on top to carry a roadway, section as per margin.

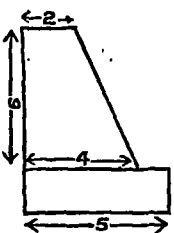
The total quantity of masonry in walls for the above is 11,850 cubic feet at Rs. 15 per 100 cubic feet Rs. 1,778

The estimate also provides for two sluices at Rs. 500 each.

Revenue.

2,143 bighas in bandh at annas 12	Rs. 1,617
Contract cost	„ 9,846
Famine „	„ 16,775
Profit on Contract cost	16.4 per cent.
„ Famine „	9.6 „
Relief workers for three months—Numbers daily—	
Diggers	350
Carriers	875
TOTAL	1,225

The estimate for the whole work 1 to 27, with dividing portion 8 to A, allows, in addition to the foregoing, for 100 feet length of wall, section as per margin, between 9 and 10, 4,600 cubic feet of masonry at 15 per 100 cubic feet; also for two extra sluices at Rs. 250 each.



Revenue.

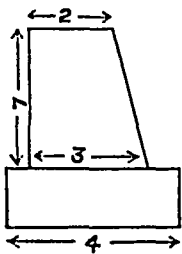
3,768 bighas in bandh at annas 12	Rs. 2,826
Contract cost	„ 22,840
Famine „	„ 41,513
Profit on Contract cost	12.3 per cent.
„ Famine „	6.8 „

Relief workers for three months—Numbers daily—

Diggers	.	.	.	.	.	.	.	.	.	.	1,520
Carriers	.	.	.	.	.	.	.	.	.	.	3,500
										TOTAL	4,120

PROJECT No. 38.—*Dahlonan Pahari Bandh*.—This will be a large bandh about three miles long connecting the villages of Dahlonan and Pahari, which are north-east of Indergarh. The south end rests on the hill by Dahlonan village and the north end of the bandh on the spur which forms the east end of the hill by east Pahari village.

The waste weir must be constructed at the south end to drain to the south. The soil to be enclosed is very good and was nearly all out of cultivation with here and there patches of *kans* grass.



The estimate allows for walls 50 feet long, section as per margin, between 16 and 18, 100 feet long, section as per margin, between 21 and 22, total 4,425 cubic feet of masonry at Rs. 15 per 100 cubic feet=Rs. 664.

Three sluices are provided for at Rs. 500 each.

Revenue.

										Rs.
4,170 bighas inside bandh at annas	12	.	.	.	.	.	.	.	.	= 3,123
500 " outside " " " "	8	.	.	.	.	.	.	.	.	= 150
										TOTAL
										3,273
Contract cost	.	.	.	.	.	.	.	.	.	Rs. 25,897
Famine "	.	.	.	.	.	.	.	.	.	" 49,522
Profit on Contract cost	.	.	.	.	.	.	.	.	.	12.2 per cent.
" Famine "	.	.	.	.	.	.	.	.	.	6.6 "
										Relief workers for three months—Numbers daily—
Diggers	.	.	.	.	.	.	.	.	.	1,666
Carriers	.	.	.	.	.	.	.	.	.	4,165
										TOTAL
										5,831

Summary for Dehra State.

GARRAULI STATE.

PROJECT No. 39.—*Garrauli Bandhs*.—This is a small State. The existing bandhs shown on the plan in black were made as relief works in 1897. They were not made strong enough and a breach was made at 14.

The present scheme is to thicken and raise the existing bandhs as shown in the plan. The upper bandh 1 to A will have a natural waste weir, the overflow escaping to the south as shown when it reaches the level 102·3. It should have an overflow sluice by point 6 to discharge into the lower bandh, whose water level is to be at 94·0. The existing bandh requires to be prolonged from 17 to 18 and a waste weir to be cut round 18. A sluice will be required at 14.

The soil is very good and was nearly all out of cultivation. The high-water level of the lower bandh, 7 to 18, had to be kept low to avoid flooding land that has been leased to Government. The boundary of this land runs near 8 and thence northward and will be just touched by the water level of the lower bandh. The project contemplates both bandhs being raised, but either could be done separately, so separate calculations are given.

Bandh 1 to 6 to 7 to 8 :—

Revenue.

	Rs.
123 bighas in the bandh at Rs. 2	246
30 „ outside „ „ Re. 1	50
TOTAL	296
Contract cost	Rs. 4,751
Famine „	„ 9,083
Profit on Contract cost	6·2 per cent.
„ Famine „	3·2 „
Relief workers for three months—Numbers daily—	
Diggers	306
Carriers	765
TOTAL	1,071

Both bandhs enlarged.

Revenue.

	Rs.
123 bighas in upper bandh at Rs. 2	246
222 „ in lower „ „ „ 2	444
100 „ outside „ „ Re. 1	100
TOTAL	790
Contract cost	Rs. 5,882
Famine „	„ 11,030
Profit on Contract cost	13·4 per cent.
„ Famine „	7·1 „
Relief workers for three months—Numbers daily—	
Diggers	363
Carriers	808
TOTAL	1,171

This estimate allows for a sluice at Rs. 400 at 6 in the upper bandh and for one at Rs. 300 at 14 for the lower bandh.

ALIPORE STATE.

Two bandhs have been surveyed for this State, one at Alipore and one at Harpalpur.

PROJECT No. 40.—*Alipore Bandh*.—The site for this bandh is immediately south-east of Alipore village. The soil is good and was all out of cultivation.

The ground falls steeply, so the area flooded is small.

Two bandhs are designed, the upper one 1 to 12, to discharge into the lower one, 4 to 17 to 13. A waste weir 30 feet wide should be cut round 12 as shown to discharge into the nullah to the west.

The estimate allots Rs. 250 for a wall in the nullah for the lower bandh and Rs. 300 for sluices.

Revenue.

	Rs.
140 bighas in the bandhs at Rs. 2	280
64 „ outside „ „ Re. 1-8	96
TOTAL	376
Contract cost	Rs. 2,808
Famine „	„ 5,038
Profit on Contract cost	13.3 per cent.
„ Famine „	7.4 „
Relief workers for three months—Numbers daily—	
Diggers	160
Carriers	400
TOTAL	560

PROJECT No. 41.—*Harpalpur Bandh*.—This is a scheme to restore a small bandh which was constructed during 1897, and which was breached.

This can be extended 13 to 14, and 12 to 3 to 1. Points 3 to 11 will form a lower bandh into which the upper bandh will discharge. The estimate allows for a sluice in the upper bandh at Rs. 200, and for one in the lower bandh at Rs. 300. The soil is very good and was all out of cultivation.

Revenue.

92 bighas in bandhs at Rs. 2-8	Rs. 230
Contract cost	„ 4,570
Famine „	„ 8,614
Profit on Contract cost	5.0 per cent.
„ Famine „	2.6 „
Relief workers for three months—Numbers daily—	
Diggers	286
Carriers	715
TOTAL	1,001

Summary of Alipore State.

WORKS.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Alipore	204	376	2,808	5,038	13.3	7.4	560
Harpalpure	92	230	4,570	8,614	5.0	2.6	1,001
TOTAL	296	606	7,378	13,652	...	...	1,561

Average profit on Contract cost 9.2 per cent.
 „ „ „ Famine „ 5.0 „

BIHAR STATE.

PROJECTS NOS. 42 AND 43.—Two bandhs are provided. The soil to be enclosed in them is good soil, black-cotton and *puriya* mixed. It was nearly all out of cultivation and covered with *kans* grass.

PROJECT No. 42.—*Sal Bandh*.—This bandh comprises points 1 to 8. The estimate allows for two sluices at Rs. 400 each. A waste weir should be cut round 8.

Revenue.

	Rs.
325 bighas in the bandh at Rs. 2	= 650
100 „ outside „ „ Re. 1	= 100
TOTAL	750
Contract cost	Rs. 6,888
Famine „	„ 12,936
Profit on Contract cost	10.9 per cent.
„ Famine „	5.6 „
Relief workers for three months—Numbers daily—	
Diggers	426
Carriers	1,065
TOTAL	1,491

It is recommended that this bandh be made first. Its overflow will fall into the Sadwa bandh if the latter be constructed (Project 43).

PROJECT No. 43.—*Sadwa Bandh*.—This bandh is marked by 6 to 8 to 20. The estimate allows for two sluices at Rs. 400 each. A waste weir should be cut round 20.

Revenue.

	Rs.
533 bighas in bandh covered by water at Re 1-12	933
Add—portion 6, 5, 9, 18—	
167 bighas at Re. 1	167
TOTAL	1,100
Contract cost	Rs. 9,399
Famine „	„ 17,957
Profit on Contract cost	11.6 per cent.
„ Famine „	6.2 „
Relief workers for three months—Numbers daily—	
Diggers	604
Carriers	1,510
TOTAL	2,114

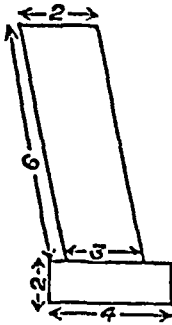
Summary for Bihar State.

WORKS.	Bighas.	Revenue.	Contract cost.	Famine cost.	Profit on		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Sal	425	750	6,888	12,936	10.9	5.6	1,491
Sadwa	700	1,100	9,399	17,957	11.6	6.2	2,114
TOTAL	1,125	1,850	16,287	30,993	...	..	3,605

Average profit on Contract cost 11.2 per cent.
 „ „ „ Famine „ 6.9 „

TORI FUTTEHPUR STATE.

PROJECT No. 44.—*Tori Futtehpur Bandh*.—This is a small State and one bandh has been surveyed which will be $\frac{1}{2}$ mile east of the village Tori Futtehpur. The soil is good *purwa*. It was nearly all out of cultivation and covered with *kans* grass. The estimate allows for a wall 30 feet long, section as per margin, in the nullah and for two sluices at Rs. 350 each.



700 cubic feet at Rs. 15 = Rs. 105.

Revenue.

	Rs.
236 bighas in the bandh at Rs. 2	472
200 „ outside „ „ Re. 1	200
TOTAL .	672
Contract cost	Rs. 8,437
Famine „	„ 16,029
Profit on Contract cost	7.9 per cent.
„ Famine „	4.2 „
Relief workers for three months—Numbers daily—	
Diggers	535
Carriers	1,338
TOTAL .	1,873

DHURWAI STATE.

PROJECT No. 45.—*Dhurwai Bandh*.—This is a small State for which one bandh has been surveyed which will be about $\frac{1}{2}$ mile south-east of Dhurwai. The land to be enclosed is good soil, and was nearly all out of cultivation and covered with *kans* grass. The estimate allows for one sluice at Rs. 300.

Revenue.

	Rs.
170 bighas in the bandh at Rs. 2	340
100 „ outside „ „ Re. 1	100
TOTAL .	440
Contract cost	Rs. 6,271
Famine „	„ 12,174
Profit on Contract cost	7.01 per cent.
„ Famine „	2.6 „
Relief workers for three months—Numbers daily—	
Diggers	440
Carriers	1,100
TOTAL .	1,540

A waste weir should be cut round 1. There is a good deal of land to the south of Dhurwai covered with *kans* grass which might profitably have bandhs.

BIJNA STATE.

PROJECT No. 46.—*Bijna Bandh*.—This is a small State adjoining Dhurwai. One bandh has been surveyed which will be immediately north of Bijna. The soil consists of a mixture of *mar* and black-cotton soil and only one-fourth

of it was cultivated. An average increase of revenue of Rs. 2 per bigha is assumed for the bandh. The estimate allows for one sluice at Rs. 350.

Revenue.

	Rs.
215 bighas in the bandh at Rs. 2	=430
100 „ outside „ „ Re. 1	=100
TOTAL	530
Contract cost	Rs. 6,027
Famine „	„ 11,686
Profit on Contract cost	8.6 per cent.
„ Famine „	5.5 „
Relief workers for three months—Numbers daily—	
Diggers	388
Carriers	970
TOTAL	1,358

NAIGAWAN RIBAI STATE.

PROJECT No. 47.—*Naigawan Ribai Bandh*.—This is a small State lying north of Harpalpur. One bandh has been surveyed which will stretch nearly from the north to the south boundary across the road which leads from Naigawan Ribai village to the chowki on the Harpalpur-Panwari Road. This chowki is near the hill shown on the right-hand top corner of the plan and is $2\frac{1}{2}$ miles from Mohobkhana village.

The soil to be enclosed is very good, consisting of a mixture of black-cotton soil and *mar*. Most of it was out of cultivation. An average profit of Rs. 2-4 per bigha is assumed for the bandh.

Revenue.

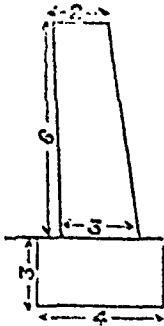
	Rs.
215 bighas in the bandh at Rs. 2-4	=484
100 „ outside „ „ „ Re. 1	=100
TOTAL	584
Contract cost	Rs. 9,884
Famine „	„ 19,400
Profit on Contract cost	5.9 per cent.
„ Famine „	3.0 „
Relief workers for three month—Number daily—	
Diggers	672
Carriers	1,680
TOTAL	2,352

The estimate allots Rs. 350 for one sluice.

LUGHASI STATE.

PROJECTS NOS. 48 AND 49.—Two bandhs have been surveyed for this State. They could be constructed separately, or both could be made as one work. In this case the upper bandh 1 to 16 would discharge through a sluice into the lower bandh 7 to 17 to 26.

The soil is good and all the land south of point 14 was out of cultivation and covered with *kans* grass.



PROJECT No. 48.—The estimate for bandh 1 to 16 allows for a wall 30 feet long, section as per margin, in the nullah between 14 and 15, also for two sluices at Rs. 300 each.

\$10 cubic feet at Rs. 15 per 100 cubic feet
=Rs. 123.

Bandh 1 to 16 :—

Revenue.

	Rs.
465 bighas in the bandh at Rs. 2	=930
200 „ outside „ „ Re. 1	=200
TOTAL	1,130
Contract cost	Rs. 13,347
Famine „	28,010
Profit on Contract cost	8.4 per cent.
„ Famine „	4.3 „
Relief workers for three months—Numbers daily—	
Diggers	886
Carriers	2,215
TOTAL	3,001

PROJECT No. 49.—The estimate for bandh 7, 17, 26 allows for one sluice at Rs. 200.

Revenue.

	Rs.
104 bighas in the bandh at Rs. 2	=208
50 „ outside „ „ Re. 1	=50
TOTAL	258
Contract cost	Rs. 2,258
Famine „	4,305
Profit on Contract cost	11.4 per cent.
„ Famine „	6.8 „
Relief workers for three months—Numbers daily—	
Diggers	144
Carriers	360
TOTAL	504

Summary for Lughasi State.

WORKS.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Bhadasai Lughasi, Upper	665	1,130	12,711	26,010	8.4	4.3	3,001
Ditto Lower	154	258	2,258	4,305	11.4	5.9	504
	819	1,388	14,969	30,315	...	...	3,505

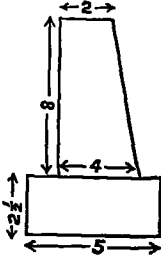
Average profit on Contract cost 9.9 per cent.
 „ „ Famine „ 5.2 „

Waste weirs should be constructed round both ends of the upper bandh and round 26 for the lower bandh.

BANKA PAHARI STATE.

This is a very small State lying north of Tori Futtehpur.

The site surveyed is the only one in the State suitable for a bandh.



PROJECT No. 50.—*Banka Pahari*.—

The estimate allows for a bandh being made 20 feet wide on the top slope on the water side $\frac{1}{2}$ and on the outside $\frac{1}{2}$; also for a wall 100 feet long, section as per margin, in the nullah. Rupees 500 is allotted for a sluice.

3,650 cubic feet masonry at Rs. 15 = Rs. 548.

Revenue.

	Rs.
472 bighas in the bandh at Re. 1-4	590
100 „ outside „ „ „ 1	100
TOTAL	690
Contract cost	Rs. 9,946
Famine „	„ 18,791
Profit on Contract cost	6.9 per cent.
„ Famine „	3.6 „
Relief workers for three months—Numbers daily—	
Diggers	468
Carriers	1,170
TOTAL	1,638

Waste weirs should be cut round both ends.

CHHATARPUR STATE.

A larger portion of this State north of the Chhatarpur-Panna road is unsuited for large bandhs.

Ten surveys have been made for works at Hannua, Newari, Malara, Urdmon, Natua, and Moreri.

PROJECT No. 51.—*Hannua Tank*.—Hannua is on the road from Chhatarpur to Newari. The project is to close the gaps between rocks and bandh the stream as shown to form a tank from which a canal could be made to carry water to the land to the north.

The estimate provides for 56,700 cubic feet of masonry in the walls required at Rs. 12 per 100 cubic feet = Rs. 6,804, also Rs. 600 for a sluice.

The amounts allotted to the different gaps requiring walls are—

Wall in 6, 7	4,191 cubic feet.
„ 8, 9	45,441 „
„ 10, 11	1,190 „
„ 12, 13	1,920 „
„ 14, 15	8,922 „
	5,664 say
	57,000 cubic feet.

The earth bandh behind wall 6, 7 is to be 10 feet wide at top, rear slope $\frac{1}{2}$. That behind wall 8, 9 is to be 16 feet wide at top, rear slope $\frac{1}{2}$. That behind the remaining walls is to be 10 feet wide at top, rear slope $\frac{1}{2}$.

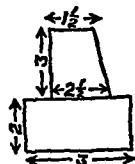
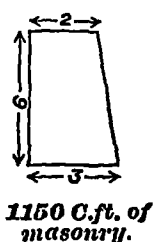
Both the land to be flooded in the tank and that to be commanded by the canal were out of cultivation. The latter is very good *purwa* soil. It is estimated that the tank will hold storage for at least 200 bighas. This is probably under-estimated, and the canal commands considerably more. It is assumed that as the water falls 50 bighas can be cultivated round the edge.

Revenue.

	Rs.
200 bighas canal irrigation at Rs. 2-8	500
50 „ in tank „ „ „ 2	100
	<hr/>
TOTAL	600
	<hr/>
Contract cost	Rs. 12,078
Famine „	„ 16,382
	<hr/>
Profit on Contract cost	5.0 per cent.
„ Famine „	3.6 „
	<hr/>
Relief workers for three months—Numbers daily—	
Diggers	310
Carriers	800
	<hr/>
TOTAL	1,110
	<hr/>

In the estimate of profit no account has been taken of Singara nut which returns revenue.

PROJECT No. 52.—*Newari Bandh*.—This is a project to dam the nullahs lying north of Newari tank which flow westwards. The bundh will extend from the north end of Newari hill to the hill which lies west of Bari village.



The estimate allows for walls as follows:—

Between 2 and 3—50 feet length of wall section as per margin.

Between 6 and 7—60 feet length of the above section = 1,380 cubic feet masonry, also 20 feet length of wall.

Section as per margin.

Between 9 and 10, 40 feet length of wall, same section as between 2 and 3 = 920 cubic feet masonry. Total masonry 3,700 cubic feet at Rs. 12 per 100 cubic feet = Rs. 440.

The bandh will receive the overflow from Newari tank, the high-water level being the level at which the water stood in the tank on 10th January 1898. The highest point of the waste weir of Newari tank is 1 foot above this (R. L. 101.0), so that before the water in the proposed bandh can overtop the bandh it must raise the level all over Newari tank by 4 feet. This will require so much water that it is a safeguard for the bandh. However, a waste weir may be cut round 14.

The soil to be enclosed was nearly all out of cultivation, and also that between the bandh line and the road. It is a mixture of *purwa* and black-cotton soil.

Revenue:

	Rs.
303 bighas in the bandh at Rs. 2	=616
150 „ outside „ „ „ Re. 1	=150
TOTAL	766

Contract cost	Rs. 9,228
Famine „	„ 17,569
Profit on Contract cost	8.3 per cent.
„ Famine „	4.3 „

Relief workers for three months—Numbers daily—

Diggers	588
Carriers	1,470
TOTAL	2,058

PROJECT No. 53.—*Newari Canal*.—This project is to construct a tunnel and sluice in the existing bandh of Newari tank, the sluice to be at 1 (see plan). From this canal will be cut to 2 and 17 along the side of the hills. From 2 a canal would run to 16, which commands 400 bighas of good soil. This soil was all out of cultivation.

From 17 a canal would run to 29 commanding at least 300 bighas. A *matum* has been built on the bandh to mark point 1.

The water on 6th January 1898 stood at R. L. 196.42. The floor of the tunnel in the sluice is designed to be at R. L. 196 or $10\frac{1}{2}$ feet below the water-level of January. From the sluice to points 2 and 17 $1\frac{1}{2}$ fall is allowed. The water sinks in the tank by evaporation 2 or 3 feet in the hot weather. Assuming that it sinks 3 feet, 7 feet head of water will remain.

The details of the estimate are:—

DETAILS OF COST.	Contract cost.	Famine cost.
Sluice in bandh—	Rs.	Rs.
Excavation 137,000 cubic feet at Rs. 5 and Rs. 10	685	1,370
Tunnel and sluice chamber 155,000 cubic feet masonry at Rs. 12 per 100	1,860	1,860
Arch masonry at Rs. 20, 2,300 cubic feet	460	460
One sluice gate	100	100
Discharge channel (masonry at Rs. 12) 12,300 cubic feet for 1,600 running feet	1,476	1,476
Canal excavation at Rs. 3 and Rs. 6 per 1,000 cubic feet (11,200 running feet) 180,000 cubic feet	540	1,080
Culvert under road—	Rs.	
Excavation at Rs. 4 and Rs. 8, 10,000 cubic feet =40		
Masonry „ 12 1,167 „ =78		
Arch „ 20 170 „ =34		
Metalling road at Rs. 5 per 100, 1,600 cubic feet =80		
232	232	272
<i>Add—</i> for a second culvert	232	272
	5,585	6,890
<i>Add—</i> 5 per cent.	279	350
TOTAL	5,864	7,240

		Revenue.	
Canal 2 to 16 commands .	.	.	400 bighas.
„ 17 „ 29 „	.	.	300 „
		TOTAL	700 „
		at Rs. 2=Rs. 1,400	„
Contract cost .	.	.	Rs. 5,884
Famine „	.	.	„ 7,240
Profit on Contract cost	.	.	23.8 per cent.
„ Famine „	.	.	19.3 „
Relief workers for three months—Numbers daily—			
Diggers .	.	.	100
Carriers	.	.	250
		TOTAL	350

This work is not well suited as a relief work. It should be one of the first to be carried out as a protective work.

PROJECT No. 54.—*Malara Tank Canal*.—This is a scheme to construct a sluice in the bandh of the existing tank at Malara, and to irrigate thereby by canal 200 bighas of good soil that was all out of cultivation.

The estimate allows for a sluice as shown on the plan and for a masonry bridge to carry the canal over the nullah between 9 and 10, also for the excavation of the canal.

The tank was leaking, and when the water is low the inner wall should be repaired.

The details of the estimate are:—

DETAILS OF COST.	Contract cost.	Famine cost.
	Rs.	Rs.
Sluice excavation at Rs. 6 and Rs. 12, including refilling in earth, 55,000 cubic feet .	318	636
Masonry at Rs. 12 per 100, 6,400 cubic feet .	768	768
Arch masonry at Rs. 20 per 100, 660 cubic feet .	132	132
One sluice gate .	100	100
<i>Bridge over nullah between 9 and 10.</i>		
Excavation at Rs. 4 and at Rs. 8, 10,000 cubic feet .	40	80
Masonry at Rs. 12 per 100, 6,400 cubic feet .	768	768
Canal 45,000 running feet at Rs. 5 and Rs. 10 per 100 r. ft. .	225	450
Repairs to tank .	400	700
	2,751	3,634
Add—5 per cent.	138	182
	2,889	3,816

	Revenue.	Rs.
200 bighas canal irrigation at Rs. 2-8 .	.	=500
Profit on Contract cost .	.	17.3 per cent.
„ Famine „	.	13.1 „
Relief workers for three months—Numbers daily—		
Diggers .	.	50
Carriers .	.	125
	TOTAL	175

This work should be carried out as a protective work.

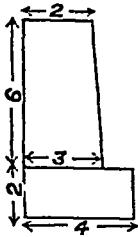
PROJECTS NOS. 55 AND 56.—*Urdmon Bundhs*.—The site for these works is north and north-west of the village of Urdmon. The two bandhs could be constructed separately as follows:—

Project No. 55.—West bandh 1 to 11 to C and,

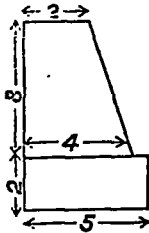
Project No. 56.—East „ C to 11 to 24,

or both can be made as one work with the separating portion 11 C, which should have a sluice near 11 to control the discharge from the west into the east bandh. Both bandhs will require also a sluice to empty them. Rupees 400 is allotted for each sluice.

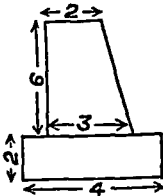
The estimate provides for masonry walls as follows:—



Between 4 and 5—wall 50 feet long, section as per margin, 1,150 cubic feet of masonry at Rs. 15 per 100 cubic feet.



Between 9 and 10—a wall 30 feet long, section as per margin, 1,020 cubic feet at Rs. 15 per 100 cubic feet.



Between 12 and 13—a wall 50 feet long, section as per margin, 1,150 cubic feet at Rs. 15 per 100 cubic feet.

Total cost of walls . . . Rs. 450

West bandh.—With two walls and one sluice 1 to 11 to C.

	Rs.
266 bighas in the bandh at Rs. 2	=532
109 „ outside „ „ Re. 1	=100
TOTAL	632
Contract cost	Rs. 7,530
Famine „	„ 14,344
Profit on Contract cost	8.3 per cent.
„ Famine „	4.4 „
Relief workers for three months—Numbers daily—	
Diggers	504
Carriers	1,260
TOTAL	1,760

East bandh.—C 11 24 with one wall and one sluice—

	Rs.
250 bighas in the bandh, at Rs. 2	=500
200 „ outside „ „ Re. 1	=200
TOTAL	700
Contract cost	Rs. 11,199
Famine „	„ 21,818
Profit on Contract cost	6.3 per cent.
„ Famine „	3.2 „
Relief workers for three months—Numbers daily—	
Diggers	750
Carriers	1,875
TOTAL	2,625

If both bandhs are constructed as one work; three sluices will be required, the third being in the separating portions 11 C.

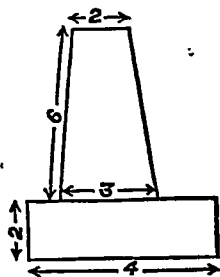
Revenue.

	Rs.
514 bighas in the bandhs, at Rs. 2	= 1,028
300 „ outside „ „ Re. 1	= 300
TOTAL	1,328
Contract cost	Rs. 18,664
Famine „	„ 35,195
Profit on Contract cost	7.1 per cent.
„ Famine „	5.7 „
Relief workers for three months—Numbers daily—	
Diggers	1,300
Carriers	5,250
TOTAL	4,550

PROJECT NO. 57.—*Jhikmow Purwa Bandh*.—This provides for a small bandh near a *purwa* of Jhikmow which is about one mile east of Urdmon. The soil to be enclosed is good and was nearly all out of cultivation.

The waste weir may require a drop wall in the second year, as it will scour a good deal.

The estimate allows for walls in the nullah, a wall 40 feet long and another 20 feet long, both of section as per margin, total 1,380 cubic feet of masonry at Rs. 15 per 100 cubic feet = Rs. 207. Rupees 400 is allotted for a sluice.



Revenue.

	Rs.
104 bighas in the bandh at Rs. 2	= 208
50 „ outside „ „ Re. 1	= 50
TOTAL	258
Contract cost	Rs. 2,842
Famine „	„ 5,047
Profit on Contract cost	9.0 per cent.
„ Famine „	5.0 „
Relief workers for three months—Numbers daily—	
Diggers	166
Carriers	415
TOTAL	581

PROJECTS NOS. 58 AND 59.—*Natna Bandhs*.—These provide for two bandhs south of Natna village. The object is to dam the nullah where it is not large and to carry the water on to the top of the ridge south of Natna village. To do this both bandhs must be constructed as one work, but either could be made separately. If both are made, the overflow from the south bandh will fall into the north bandh. A waste weir should be provided round point 24. The profit calculated for the north bandh is low, as only Re. 1.8 per bigha revenue has been taken. This is because some of the land is *ranker*, but after a few years the deposit of silt would improve the soil and afford a better return.

South Bandh 1 13 A.

The estimate allows for 50 feet length of wall in the nullah and for a sluice at Rs. 300.

Revenue.

									Rs.
211	bighas	in the	bandh	at	Rs. 2	.	.	.	=422
150	"	outside	"	Re. 1	.	.	.	.	=150
TOTAL									572
Contract cost									Rs. 7,512
Famine "									" 14,656
Profit on Contract cost									7.6 per cent.
" Famine "									3.9 "
Relief workers for three months—Numbers daily—									
Diggers									504
Carriers									1,260
TOTAL									1,764

North Bandh A 13 24.

The estimate allows for a sluice at Rs. 300.

Revenue.

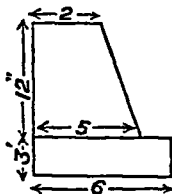
									Rs.
218	bighas	in the	bandh	at	Rs. 1-8	.	.	.	=327
100	"	outside	"	Re. 1	.	.	.	.	=100
TOTAL									427
Contract cost									Rs. 8,952
Famine "									" 17,592
Profit on Contract cost									4.7 per cent.
" Famine "									2.4 "
Relief workers for three months—Numbers daily—									
Diggers									610
Carriers									1,525
TOTAL									2,135

PROJECT NO. 60.—*Moreri Bandh.*—This provides for a bandh east of Moreri between that village and Patna. It can be divided into two parts which can be made separately, viz.,

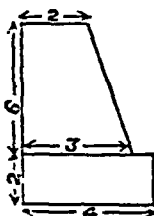
*West Bandh 18 A.**East " A 8 24.*

The west bandh should be constructed first with a waste weir round each end if the whole work is not to be executed at once. If the east bandh is added, it will receive the overflow from the west bandh by the waste weir round A and by a sluice which should be constructed in 8 A near 8.

The estimate provides for walls as follows :—



Between 5 and 8—wall 100 feet long, section as per margin, 7,000 cubic feet masonry at Rs. 12=Rs. 840.



Between 12 and 13—85 feet length of wall, section as per margin, 1,905 cubic feet masonry at Rs. 12=Rs. 229.

In the west bandh a sluice at Rs. 500 is allowed for between 5 and 6 and for the east bandh two sluices at Rs. 350 each.

West Bandh.

The soil is good and was all out of cultivation.

Revenue.

270 bighas in the bandh at Rs. 2	Rs. =540
50 „ outside „ „ Re. 1	=50
TOTAL	590
Contract cost	Rs. 4,406
Famine „	„ 7,405
Profit on Contract cost	13.0 per cent.
„ Famine „	7.9 „
Relief workers for three months—Numbers daily—	
Diggers	212
Carriers	530
TOTAL	742

*East Bandh.**Revenue.*

177 bighas in the bandh at Rs. 2	Rs. =354
100 „ outside „ „ Re. 1	=100
TOTAL	454
Contract cost	Rs. 10,724
Famine „	„ 20,578
Profit on Contract cost	4.2 per cent.
„ Famine „	2.2 „
Relief workers for three months—Numbers daily—	
Diggers	174
Carriers	435
TOTAL	609

If both bandhs are constructed—

Total Contract cost	Rs. 11,058
„ Famine „	„ 20,196
Profit on Contract cost	9.4 per cent.
„ Famine „	5.1 „
Relief workers for three months—Numbers daily—	
Diggers	677
Carriers	1,695
TOTAL	2,372

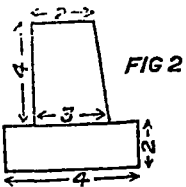
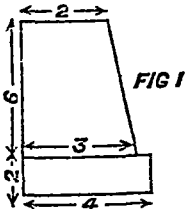
Summary for Chhatarpur State.

WORKS.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Hamma Tank	250	600	12,078	16,382	5.0	3.6	1,110
Niwari Bandh	458	766	9,228	17,569	8.3	4.9	2,058
„ Canal	700	1,400	5,864	7,240	23.8	19.3	350
Malsra „	200	500	2,889	3,816	17.3	13.1	175
Urdmon, West	366	632	7,530	14,334	8.3	4.4	1,764
„ East	450	700	11,199	21,818	6.3	3.2	2,625
Jhikmow	154	258	2,842	5,047	9.0	5.0	551
Natna, South	361	572	7,512	14,656	7.6	3.9	1,764
„ North	318	427	8,952	17,592	4.7	2.4	2,135
Moreri	597	1,014	11,058	20,196	9.4	5.1	2,372
TOTAL	3,854	6,899	79,152	1,38,650	...	...	14,934

Average profit on Contract cost 100 per cent.
 „ „ Famine „ 6.5 „

[illegible]

PROJECT No. 61.—*Bamnata Bandh*.—This provides for a bandh about



Between 5 and 6 a wall 40 feet long, section as per margin, figure 2. Total 1,704 cubic feet of masonry at Rs. 15 per 100 cubic feet=Rs. 255.

	Revenue.	Rs.
358 bigas in the bandh at Rs. 2	. . . . .	716
100 „ outside „ „ Re. 1	. . . . .	100
		<hr/>
	TOTAL	816
		<hr/>
Contract cost	. . . . .	Rs. 7,921
Famine „	. . . . .	„ 14,833
Profit on Contract cost	. . . . .	10·3 per cent.
„ Famine „	. . . . .	5·5

Diggers	.	.	.	.	.	.	.	.	.	364
Carriers	.	.	.	.	.	.	.	.	.	910
TOTAL										1,274

West Bandh 1 to 15.—The estimate provides for a sluice at Rs. 500.

	Revenue.	Rs.
120 bighas in the bandh at Rs. 2	.	240
80 „ outside „ „ Re. 1	.	80
	TOTAL	320
Contract cost	.	Rs. 2,802
Famine „	.	„ 5,080
Profit on Contract cost	.	11·4 per cent.
„ Famine „	.	6·3 „

PROJECT No. 65.—*Sarwai Bandh*.—This provides for a bandh about 1 mile west of Sarwai on the road to Churiari. The soil to be enclosed is good, 2nd class *mar* and *purwa*, and was all out of cultivation. The estimate provides for two sluices at Rs. 350 each.

	Revenue.	Rs.
120 bighas in the bandh at Rs. 2-8	.	300
100 „ outside „ „ Re. 1	.	100
	TOTAL	400
Contract cost		Rs. 5,992
Famine „		„ 10,619
Profit on Contract cost		6.6 per cent.
„ Famine „		3.7 „
Relief workers for three months—Numbers daily—		
Diggers		348
Carriers		895
	TOTAL	1,243

PROJECT No. 66.—*Rattan Sagor Canals*.—This is a scheme to build up the waste weir of Rattan Sagor tank (by Charkhari town) so as to raise the water level to level 100 (see plan) and increase its capacity, to raise the masonry all along the bandh by additional masonry 2 feet high and 3 feet thick, and putting earth filling behind this to the same level and 30 feet wide. Also to use the existing sluice to feed canals to be made as shown on the plan. Four canals can be made. They are marked on the plan line A, B, D and E, respectively, and will command 1,500 bighas of good soil most of which was out of cultivation.

The water in the *Kothi Sagor*, which lies south-west of Rattan Sagor, is at a considerably higher level than in Rattan Sagor. If a sluice is made in the road separating the two, Rattan Sagor can be fed by water from the *Kothi Sagor*.

Rupees 1,000 has been allotted as a rough estimate for this sluice. This scheme would be a most valuable protective work and should be carried out before famine comes on. The dotted blue line shows the line at which the water will stand when raised to level 100 as proposed. Some portions of the road from the west end of the bandh to the town will require to be raised and a few huts to be demolished. The sum of Rs. 2,000 is allotted for this.

The details of the estimate are :—

DETAILS OF COST.	Contract cost.	Famine cost.
	Rs.	Rs.
Raising masonry of bandh, $2,600 \times 3 \times 2 = 156,000$ cubic feet masonry at Rs. 12 per 100 cubic feet.	1,872	1,872
Earthwork in bandh $2,600 \times 30 \times 2 = 156,000$ cubic feet at Rs. 4 and at Rs. 8.	624	1,248
Raising W. W. Masonry	400	400
Alteration to existing sluice	500	500
Raising road on west side of tank and demolishing huts	2,000	4,000
Sluice, between <i>Kothi Sagor</i> and <i>Rattan Sagor</i>	1,000	1,000
	6,396	9,020
Add—5 per cent.	320	451
TOTAL	6,616	9,471

	Revenue.	
1,500 bighas at Re. 1	.	= Rs. 1,500.
Relief workers for three months—Numbers daily—		
Diggers		150
Carriers		375
	TOTAL	525

Summary of works for Charkhari State.

WORKS.	Bighas.	Revenue.	Contract cost.	Famine cost.	PROFIT ON		Relief workers, three months.
					Contract cost.	Famine cost.	
		Rs.	Rs.	Rs.			No.
Pamonta	438	816	7,521	14,833	10.3	5.5	1,271
Samchra West	200	320	2,802	5,050	11.4	6.3	560
" East	265	476	3,030	10,264	7.3	4.2	1,100
Glabra	220	127	6,351	12,110	8.3	4.2	1,505
Farnai	220	400	5,922	10,619	6.6	3.7	1,243
Battan Fagar	1,500	1,500	6,716	9,471	22.3	15.8	525
TOTAL	3,643	3,639	35,712	62,767	...	...	6,207

Average profit on Contract cost 11.0 per cent.

" " " Famine " 6.6 "

GAURIHAR STATE.

This is a small State. Time only admitted of one bandh being surveyed the side of which is immediately north-east of the village of Gaurihar.

PROJECT No. 67.—*Gaurihar Bandh*—The soil to be enclosed is good *puroa* soil and was mostly out of cultivation. The east end of the bandh should have a masonry end to prevent the overflow carrying away the earthwork. The overflow should be directed into the small tank shown on the plan.

Revenue.

	Rs.
120 bighas in the bandh at Rs. 2	=880
120 " outside " " Re. 1	=120
TOTAL	500

Contract cost	Rs. 6,167
Famine "	" 11,494
Profit on Contract cost	8.1 per cent.
" Famine "	4.3 "

Relief workers for three months—Numbers daily—

Diggers	376
Carriers	940
TOTAL	1,316

W. EWBANK, Captain, B.E.



APPENDIX No. I.

Extract, para. 60, from Captain Ramsay's Famine Report, Bundelkhand.

PRECAUTIONARY MEASURES TO BE TAKEN BEFORE THE NEXT FAMINE.

Para. 60.—I have already noted that the experience of the past shows that the States cannot unaided draw up any intelligent scheme of famine relief works. In many cases the selection of work has been left to the unfettered choice of local officials drawing thirty or forty rupees a month. It is impossible to say how soon the next famine may come, and it is therefore most important that a scheme of works should be drawn up at once; an incidental advantage of taking up the work at once is that the States will not have time to forget the difficulties in which they have found themselves for want of definite plans. The only possible means by which to obtain a satisfactory scheme is by the appointment of an Engineer, for at least a year, with a suitable subordinate establishment, to draw up a scheme for each State. I suggest that in each parganah one or more large works and a number of smaller works should be selected sufficient to employ 25 per cent. of the population for three months. There is a double advantage to be gained by this. There would be selected works for famines of varying severity, and there would always be available surveyed works which the State or zemindars could take up without the spur of famine, with the certain knowledge that the work would pay a good return. On the principle that prevention is better than cure, I think that no effort should be spared to induce the States and the people to make "bandhs." These, as I have already stated, if at all well selected, yield a good return in ordinary years, and they perfectly protect the area they command from anything short of an absolute failure of the rains. It

APPENDIX No. II.

Summary of works shewing totals for States.

STATE.	Aron.	Revenue.	Contract cost.	Famine cost.	AVERAGE PROFIT ON		Relief workers, for three months.	REMARKS.
					Contract cost.	Famine cost.		
	1	2	3	4	5	6	7	8
	Bighas.	Rs.	Rs.	Rs.			No.	
Ajaigarh . . .	5,538	9,675	59,379	1,12,144	17.6	11.4	14,025	The figures in columns 5 and 6 show the percentage of profit for each State, calculated by the total increase of revenue and the total cost of the works designed for that State.
Bijawar . . .	2,326	4,432	62,057	1,07,351	7.1	3.9	11,515	
Orchha . . .	5,036	8,703	77,932	1,42,345	12.4	7.4	12,472	
Panna . . .	1,854	3,323	33,521	55,635	9.9	5.9	5,876	
Jigni . . .	2,290	3,608	27,173	51,457	13.6	7.0	6,037	
Sarila . . .	2,821	5,071	16,657	31,530	43.3	23.1	3,612	
Bori . . .	1,789	1,789	11,077	21,055	16.1	8.4	2,478	
Baoni . . .	2,474	2,856	19,930	36,788	15.4	8.3	4,199	
Samthar . . .	3,403	3,403	17,772	33,655	10.8	10.6	4,034	
Dulia . . .	11,841	9,791	1,28,888	2,37,141	9.5	5.2	27,173	
Garranli . . .	173	296	4,751	9,093	6.2	3.2	1,071	The average profit for all the works in the scheme is— 10.7 per cent. on Contract cost. 5.9 per cent. on Famine cost.
Alipore . . .	296	606	7,878	13,652	9.2	5.0	1,561	
Bihat . . .	1,125	1,850	16,287	30,893	11.2	6.9	3,605	
Tori Futtehpur . . .	436	672	8,437	16,029	7.9	4.2	1,873	
Dhurwai . . .	270	440	6,271	12,174	7.0	3.6	1,540	
Bijna . . .	315	520	6,027	11,686	8.6	4.5	1,358	
Naigawan Ribai . . .	315	584	9,881	19,400	5.9	3.0	2,352	
Imghasi . . .	819	1,388	14,969	30,315	9.9	5.2	3,505	
Banka Pahari . . .	572	690	9,916	18,791	6.9	3.6	1,638	
Chhatarpur . . .	3,854	6,899	79,152	1,38,650	10.0	6.5	14,934	
Charkhari . . .	2,936	3,999	35,712	62,707	11.0	6.6	6,207	
Gaurihar . . .	310	500	6,167	11,494	8.1	4.3	1,316	
	50,796	71,105	6,59,367	12,03,981			1,32,381	

APPENDIX No. III.
Gang Register.

State
Pargana
Work

Number of Gang
Name of Male
Month

DATE.	WORKERS.					DEPENDANTS.			TOTAL.	REMARKS.
	Special diggers.	Ordinary diggers.	Carriers.	Working children.	Men.	Women.	Children.			
	No. Chittaks. Pice.	No. Chittaks. Pice.	No. Chittaks. Pice.	No. Chittaks. Pice.	No. Chittaks. Pice.	No. Chittaks. Pice.	No. Chittaks. Pice.	Chittaks. Pice.		
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28 .										
29 .										
30 .										
31 .										
TOTALS										

MATE'S LIST.

(To be on the back of the Gang Register).

No. of Gang _____ *Mate's name.**Name of Gang Mohurrir.*

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The Mohurrir is to sign and date entries and alterations on each occasion.

Exd.—J. W. G. & R. P.

